

Practice Lab: Advice for Applying Machine Learning

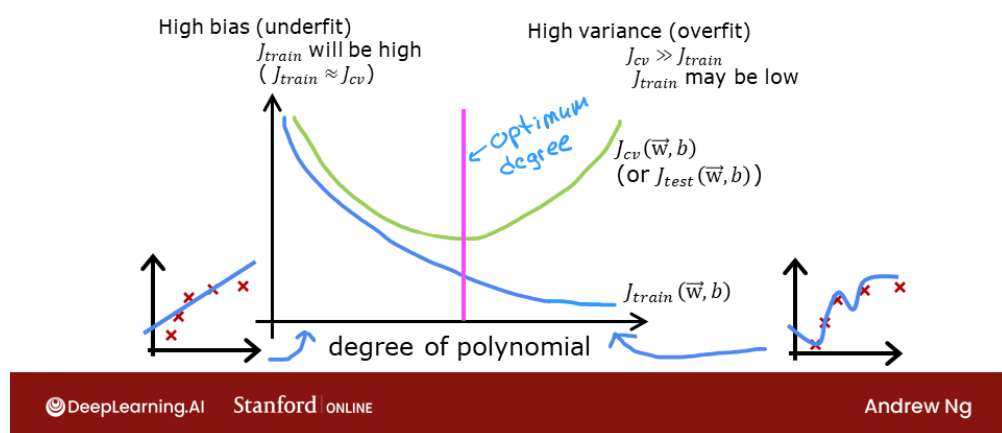
In this lab, you will explore techniques to evaluate and improve your machine learning models.

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Diagnosing bias and variance

How do you tell if your algorithm has a bias or variance problem?



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NOTE: To prevent errors from the autograder, you are not allowed to edit or delete non-graded cells in this notebook . Please also refrain from adding any new cells. **Once you have passed this assignment** and want to experiment with any of the non-graded code, you may follow the instructions at the bottom of this notebook.

1 - Packages

First, let's run the cell below to import all the packages that you will need during this assignment.

- [numpy](#) is the fundamental package for scientific computing Python.
- [matplotlib](#) is a popular library to plot graphs in Python.
- [scikitlearn](#) is a basic library for data mining
- [tensorflow](#) a popular platform for machine learning.

```
In [ ]: import numpy as np
%matplotlib widget
import matplotlib.pyplot as plt
from sklearn.linear_model import LinearRegression, Ridge
from sklearn.preprocessing import StandardScaler, PolynomialFeatures
from sklearn.model_selection import train_test_split
from sklearn.metrics import mean_squared_error
import tensorflow as tf
from keras.models import Sequential
from keras.layers import Dense
from keras.activations import relu, linear
from keras.losses import SparseCategoricalCrossentropy
from keras.optimizers import Adam

import logging
logging.getLogger("tensorflow").setLevel(logging.ERROR)

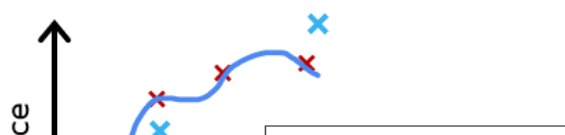
from public_tests_a1 import *

tf.keras.backend.set_floatx('float64')
from assignment_utils import *

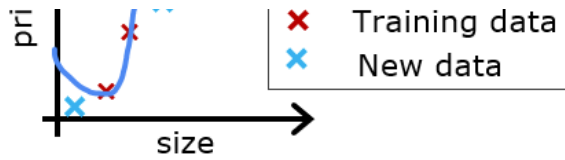
tf.autograph.set_verbosity(0)
```

2 - Evaluating a Learning Algorithm (Polynomial Regression)

Let's say you have created a machine learning model and you find it *fits* your



training data very well.
 You're done? Not quite.
 The goal of creating the
 model was to be able to
 predict values for *new*
 examples.



$$f_{\vec{w},b}(\vec{x}) = w_1x_1 + w_2x^2 + \dots + w_nx^n + b$$

How can you test your
 model's performance on new data before deploying it?
 The answer has two parts:

- Split your original data set into "Training" and "Test" sets.
 - Use the training data to fit the parameters of the model
 - Use the test data to evaluate the model on *new* data
- Develop an error function to evaluate your model.

2.1 Splitting your data set

Lectures advised reserving 20-40% of your data set for testing. Let's use an sklearn function `train_test_split` to perform the split. Double-check the shapes after running the following cell.

```
In [ ]: # Generate some data
X,y,x_ideal,y_ideal = gen_data(18, 2, 0.7)
print("X.shape", X.shape, "y.shape", y.shape)

#split the data using sklearn routine
X_train, X_test, y_train, y_test = train_test_split(X,y,test_size=0.33, random_s
print("X_train.shape", X_train.shape, "y_train.shape", y_train.shape)
print("X_test.shape", X_test.shape, "y_test.shape", y_test.shape)

X.shape (18,) y.shape (18,)
X_train.shape (12,) y_train.shape (12,)
X_test.shape (6,) y_test.shape (6,)
```

2.1.1 Plot Train, Test sets

You can see below the data points that will be part of training (in red) are intermixed with those that the model is not trained on (test). This particular data set is a quadratic function with noise added. The "ideal" curve is shown for reference.

```
In [ ]: fig, ax = plt.subplots(1,1,figsize=(4,4))
ax.plot(x_ideal, y_ideal, "--", color = "orangered", label="y_ideal", lw=1)
ax.set_title("Training, Test", fontsize = 14)
ax.set_xlabel("x")
ax.set_ylabel("y")

ax.scatter(X_train, y_train, color = "red", label="train")
ax.scatter(X_test, y_test, color = "d1blue", label="test")
ax.legend(loc='upper left')
plt.show()
```



2.2 Error calculation for model evaluation, linear regression

When *evaluating* a linear regression model, you average the squared error difference of the predicted values and the target values.

$$J_{\text{test}}(\mathbf{w}, b) = \frac{1}{2m_{\text{test}}} \sum_{i=0}^{m_{\text{test}}-1} (f_{\mathbf{w},b}(\mathbf{x}_{\text{test}}^{(i)}) - y_{\text{test}}^{(i)})^2 \quad (1)$$

Exercise 1

Below, create a function to evaluate the error on a data set for a linear regression model.

```
In [ ]: # UNQ_C1
# GRADED CELL: eval_mse
def eval_mse(y, yhat):
    """
    Calculate the mean squared error on a data set.
    Args:
        y : (ndarray Shape (m,) or (m,1)) target value of each example
        yhat : (ndarray Shape (m,) or (m,1)) predicted value of each example
    Returns:
        err: (scalar)
    """
    m = len(y)
    err = 0.0
    for i in range(m):
        ### START CODE HERE ###
        err_i = ((y[i] - yhat[i])**2)
```

```

    err += err_i
    err = err / (2*m)
    ### END CODE HERE ###

    return(err)

```

```

In [ ]: y_hat = np.array([2.4, 4.2])
        y_tmp = np.array([2.3, 4.1])
        eval_mse(y_hat, y_tmp)

        # BEGIN UNIT TEST
        test_eval_mse(eval_mse)
        # END UNIT TEST

```

All tests passed.

► [Click for hints](#)

2.3 Compare performance on training and test data

Let's build a high degree polynomial model to minimize training error. This will use the linear_regression functions from `sklearn`. The code is in the imported utility file if you would like to see the details. The steps below are:

- create and fit the model. ('fit' is another name for training or running gradient descent).
- compute the error on the training data.
- compute the error on the test data.

```

In [ ]: # create a model in sklearn, train on training data
        degree = 10
        lmodel = lin_model(degree)
        lmodel.fit(X_train, y_train)

        # predict on training data, find training error
        yhat = lmodel.predict(X_train)
        err_train = lmodel.mse(y_train, yhat)

        # predict on test data, find error
        yhat = lmodel.predict(X_test)
        err_test = lmodel.mse(y_test, yhat)

```

The computed error on the training set is substantially less than that of the test set.

```

In [ ]: print(f"training err {err_train:0.2f}, test err {err_test:0.2f}")

```

training err 58.01, test err 171215.01

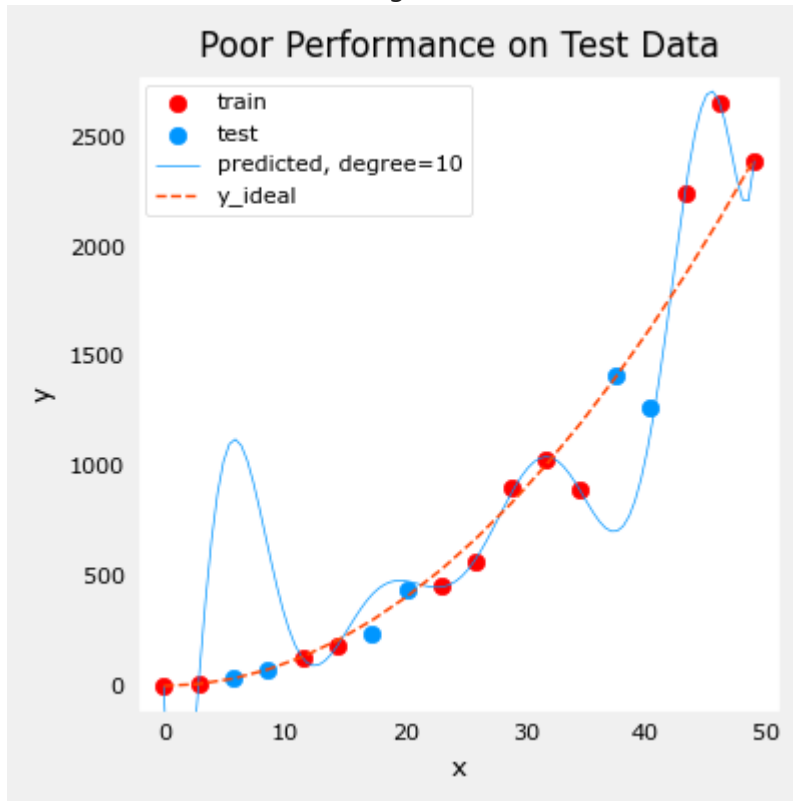
The following plot shows why this is. The model fits the training data very well. To do so, it has created a complex function. The test data was not part of the training and the model does a poor job of predicting on this data.

This model would be described as 1) is overfitting, 2) has high variance 3) 'generalizes' poorly.

```
In [ ]: # plot predictions over data range
x = np.linspace(0,int(X.max()),100) # predict values for plot
y_pred = lmodel.predict(x).reshape(-1,1)

plt_train_test(X_train, y_train, X_test, y_test, x, y_pred, x_ideal, y_ideal, de
```

Figure



The test set error shows this model will not work well on new data. If you use the test error to guide improvements in the model, then the model will perform well on the test data... but the test data was meant to represent *new* data. You need yet another set of data to test new data performance.

The proposal made during lecture is to separate data into three groups. The distribution of training, cross-validation and test sets shown in the below table is a typical distribution, but can be varied depending on the amount of data available.

data	% of total	Description
training	60	Data used to tune model parameters w and b in training or fitting
cross-validation	20	Data used to tune other model parameters like degree of polynomial, regularization or the architecture of a neural network.
test	20	Data used to test the model after tuning to gauge performance on new data

Let's generate three data sets below. We'll once again use `train_test_split` from `sklearn` but will call it twice to get three splits:

```
In [ ]: # Generate data
X,y, x_ideal,y_ideal = gen_data(40, 5, 0.7)
```

```
print("X.shape", X.shape, "y.shape", y.shape)

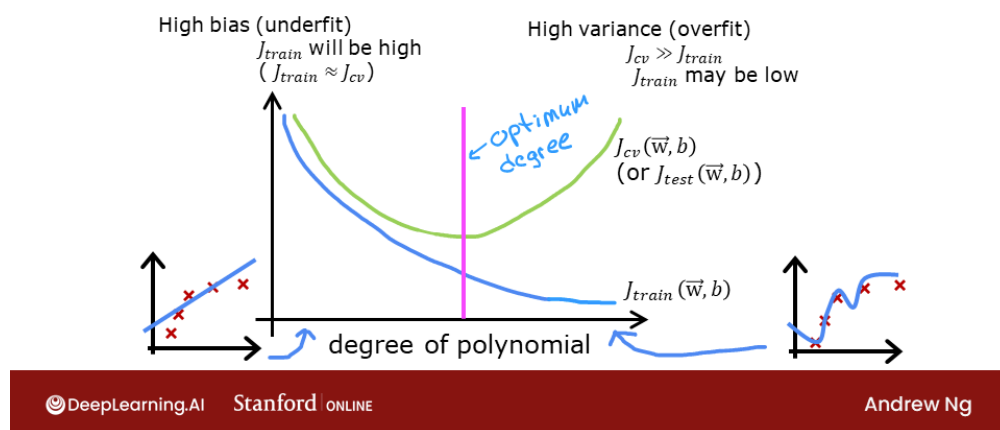
#split the data using sklearn routine
X_train, X_, y_train, y_ = train_test_split(X,y,test_size=0.40, random_state=1)
X_cv, X_test, y_cv, y_test = train_test_split(X,y_,test_size=0.50, random_state
print("X_train.shape", X_train.shape, "y_train.shape", y_train.shape)
print("X_cv.shape", X_cv.shape, "y_cv.shape", y_cv.shape)
print("X_test.shape", X_test.shape, "y_test.shape", y_test.shape)
```

```
X.shape (40,) y.shape (40,)
X_train.shape (24,) y_train.shape (24,)
X_cv.shape (8,) y_cv.shape (8,)
X_test.shape (8,) y_test.shape (8,)
```

3 - Bias and Variance

Diagnosing bias and variance

How do you tell if your algorithm has a bias or variance problem?



Above, it was clear the degree of the polynomial model was too high. How can you choose a good value? It turns out, as shown in the diagram, the training and cross-validation performance can provide guidance. By trying a range of degree values, the training and cross-validation performance can be evaluated. As the degree becomes too large, the cross-validation performance will start to degrade relative to the training performance. Let's try this on our example.

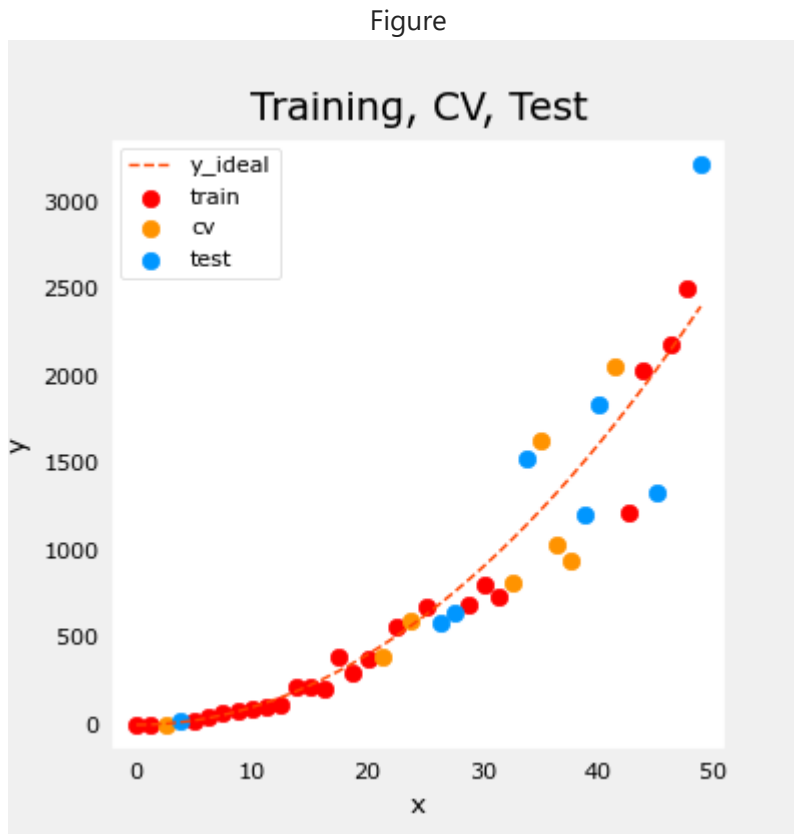
3.1 Plot Train, Cross-Validation, Test

You can see below the datapoints that will be part of training (in red) are intermixed with those that the model is not trained on (test and cv).

```
In [ ]: fig, ax = plt.subplots(1,1,figsize=(4,4))
ax.plot(x_ideal, y_ideal, "--", color = "orangered", label="y_ideal", lw=1)
ax.set_title("Training, CV, Test", fontsize = 14)
ax.set_xlabel("x")
ax.set_ylabel("y")

ax.scatter(X_train, y_train, color = "red", label="train")
ax.scatter(X_cv, y_cv, color = dlc["dlorange"], label="cv")
ax.scatter(X_test, y_test, color = dlc["dlblue"], label="test")
```

```
ax.legend(loc='upper left')
plt.show()
```



3.2 Finding the optimal degree

In previous labs, you found that you could create a model capable of fitting complex curves by utilizing a polynomial (See Course1, Week2 Feature Engineering and Polynomial Regression Lab). Further, you demonstrated that by increasing the *degree* of the polynomial, you could *create* overfitting. (See Course 1, Week3, Over-Fitting Lab). Let's use that knowledge here to test our ability to tell the difference between over-fitting and under-fitting.

Let's train the model repeatedly, increasing the degree of the polynomial each iteration. Here, we're going to use the [scikit-learn](#) linear regression model for speed and simplicity.

```
In [ ]: max_degree = 9
err_train = np.zeros(max_degree)
err_cv = np.zeros(max_degree)
x = np.linspace(0, int(X.max()), 100)
y_pred = np.zeros((100, max_degree)) #columns are lines to plot

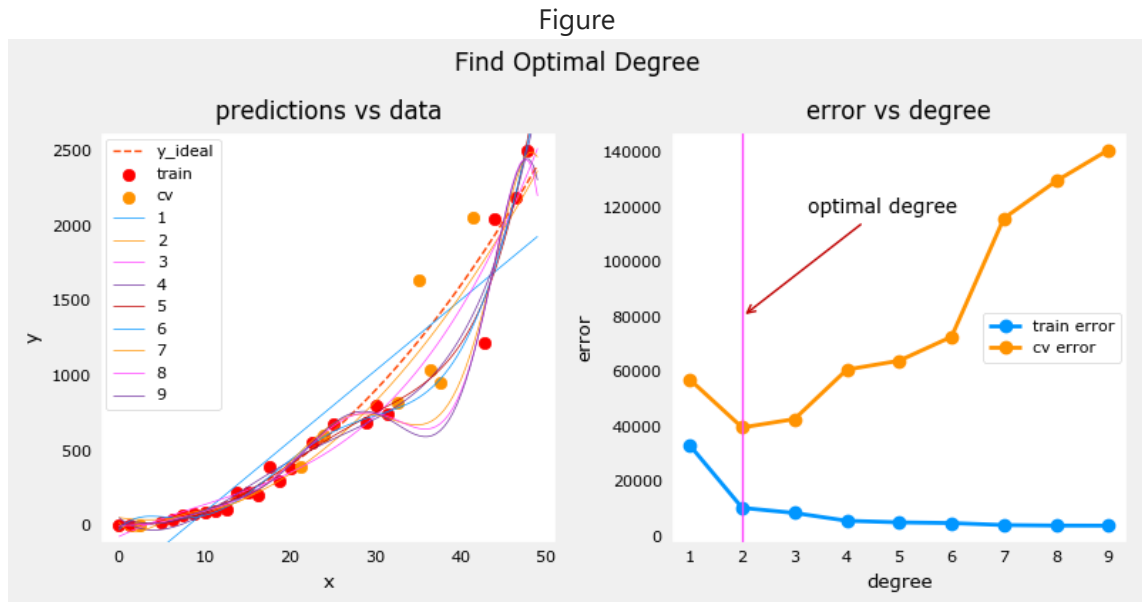
for degree in range(max_degree):
    lmodel = lin_model(degree+1)
    lmodel.fit(X_train, y_train)
    yhat = lmodel.predict(X_train)
    err_train[degree] = lmodel.mse(y_train, yhat)
    yhat = lmodel.predict(X_cv)
    err_cv[degree] = lmodel.mse(y_cv, yhat)
    y_pred[:, degree] = lmodel.predict(x)
```



```
optimal_degree = np.argmin(err_cv)+1
```

Let's plot the result:

```
In [ ]: plt.close("all")
plt_optimal_degree(X_train, y_train, X_cv, y_cv, x, y_pred, x_ideal, y_ideal,
                  err_train, err_cv, optimal_degree, max_degree)
```



The plot above demonstrates that separating data into two groups, data the model is trained on and data the model has not been trained on, can be used to determine if the model is underfitting or overfitting. In our example, we created a variety of models varying from underfitting to overfitting by increasing the degree of the polynomial used.

- On the left plot, the solid lines represent the predictions from these models. A polynomial model with degree 1 produces a straight line that intersects very few data points, while the maximum degree hews very closely to every data point.
- on the right:
 - the error on the trained data (blue) decreases as the model complexity increases as expected
 - the error of the cross-validation data decreases initially as the model starts to conform to the data, but then increases as the model starts to over-fit on the training data (fails to *generalize*).

It's worth noting that the curves in these examples are not as smooth as one might draw for a lecture. It's clear the specific data points assigned to each group can change your results significantly. The general trend is what is important.

3.3 Tuning Regularization.

In previous labs, you have utilized *regularization* to reduce overfitting. Similar to degree, one can use the same methodology to tune the regularization parameter λ .

Let's demonstrate this by starting with a high degree polynomial and varying the

regularization parameter.

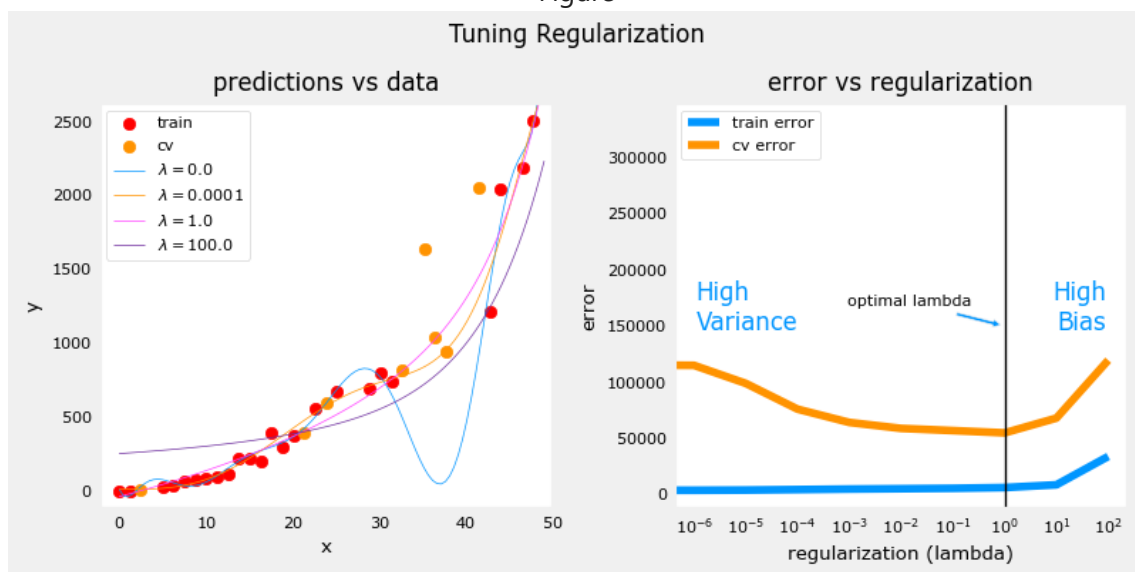
```
In [ ]: lambda_range = np.array([0.0, 1e-6, 1e-5, 1e-4, 1e-3, 1e-2, 1e-1, 1, 10, 100])
num_steps = len(lambda_range)
degree = 10
err_train = np.zeros(num_steps)
err_cv = np.zeros(num_steps)
x = np.linspace(0, int(X.max()), 100)
y_pred = np.zeros((100, num_steps)) #columns are lines to plot

for i in range(num_steps):
    lambda_ = lambda_range[i]
    lmodel = lin_model(degree, regularization=True, lambda_=lambda_)
    lmodel.fit(X_train, y_train)
    yhat = lmodel.predict(X_train)
    err_train[i] = lmodel.mse(y_train, yhat)
    yhat = lmodel.predict(X_cv)
    err_cv[i] = lmodel.mse(y_cv, yhat)
    y_pred[:, i] = lmodel.predict(x)

optimal_reg_idx = np.argmin(err_cv)
```

```
In [ ]: plt.close("all")
plt_tune_regularization(X_train, y_train, X_cv, y_cv, x, y_pred, err_train, err_
```

Figure



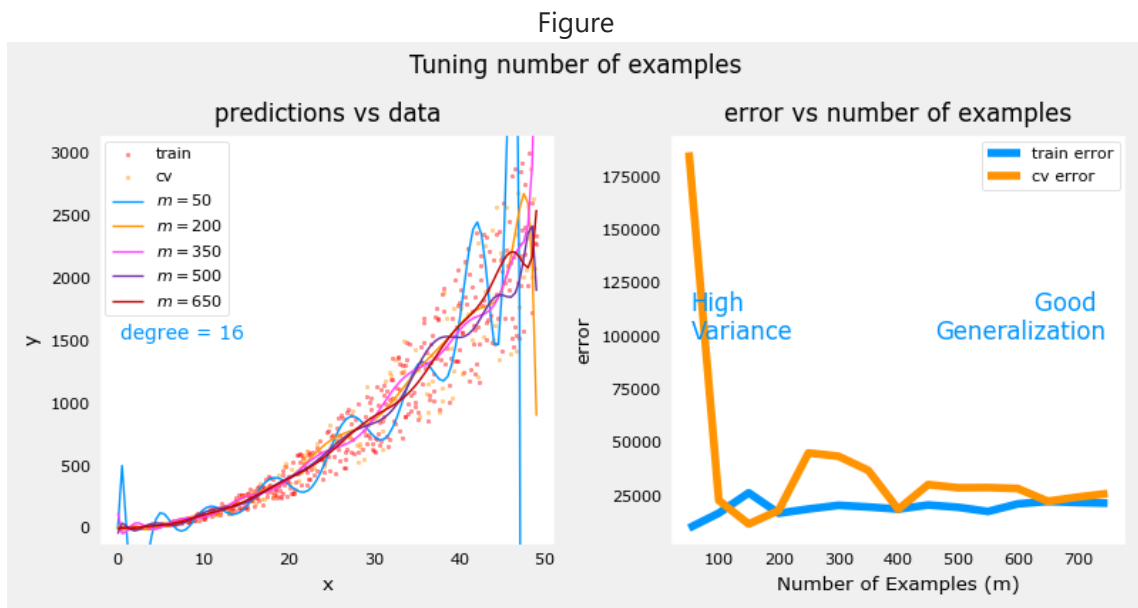
Above, the plots show that as regularization increases, the model moves from a high variance (overfitting) model to a high bias (underfitting) model. The vertical line in the right plot shows the optimal value of lambda. In this example, the polynomial degree was set to 10.

3.4 Getting more data: Increasing Training Set Size (m)

When a model is overfitting (high variance), collecting additional data can improve performance. Let's try that here.

```
In [ ]: X_train, y_train, X_cv, y_cv, x, y_pred, err_train, err_cv, m_range, degree = tun
```

```
plt_tune_m(X_train, y_train, X_cv, y_cv, x, y_pred, err_train, err_cv, m_range,
```



The above plots show that when a model has high variance and is overfitting, adding more examples improves performance. Note the curves on the left plot. The final curve with the highest value of m is a smooth curve that is in the center of the data. On the right, as the number of examples increases, the performance of the training set and cross-validation set converge to similar values. Note that the curves are not as smooth as one might see in a lecture. That is to be expected. The trend remains clear: more data improves generalization.

Note that adding more examples when the model has high bias (underfitting) does not improve performance.

4 - Evaluating a Learning Algorithm (Neural Network)

Above, you tuned aspects of a polynomial regression model. Here, you will work with a neural network model. Let's start by creating a classification data set.

4.1 Data Set

Run the cell below to generate a data set and split it into training, cross-validation (CV) and test sets. In this example, we're increasing the percentage of cross-validation data points for emphasis.

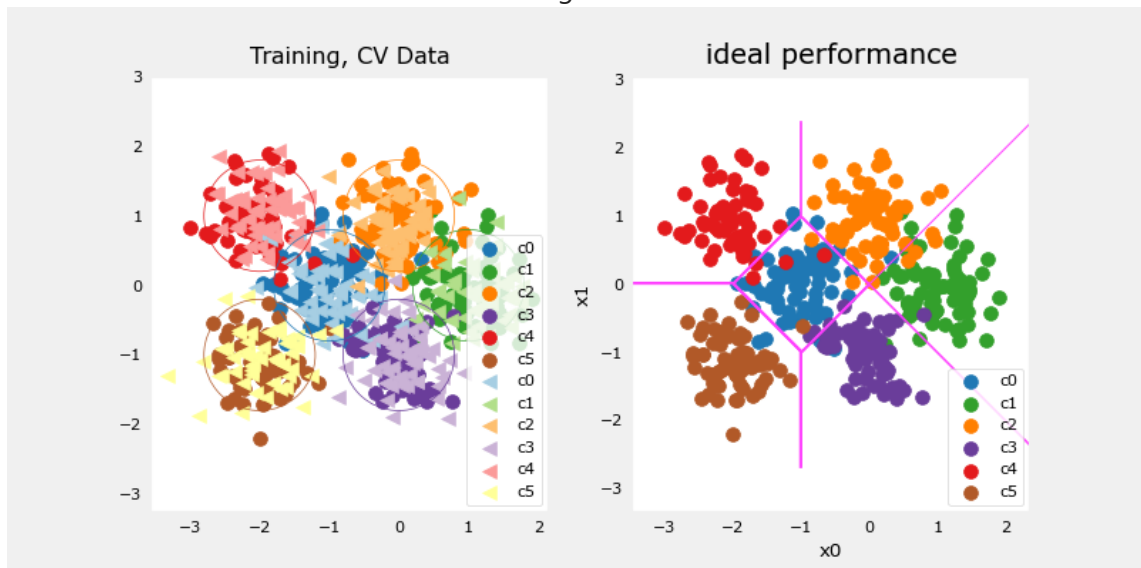
```
In [ ]: # Generate and split data set
X, y, centers, classes, std = gen_blobs()

# split the data. Large CV population for demonstration
X_train, X_, y_train, y_ = train_test_split(X,y,test_size=0.50, random_state=1)
X_cv, X_test, y_cv, y_test = train_test_split(X_,y_,test_size=0.20, random_state=1)
print("X_train.shape:", X_train.shape, "X_cv.shape:", X_cv.shape, "X_test.shape:",
```

X_train.shape: (400, 2) X_cv.shape: (320, 2) X_test.shape: (80, 2)

```
In [ ]: plt_train_eq_dist(X_train, y_train, classes, X_cv, y_cv, centers, std)
```

Figure



Above, you can see the data on the left. There are six clusters identified by color. Both training points (dots) and cross-validation points (triangles) are shown. The interesting points are those that fall in ambiguous locations where either cluster might consider them members. What would you expect a neural network model to do? What would be an example of overfitting? underfitting?

On the right is an example of an 'ideal' model, or a model one might create knowing the source of the data. The lines represent 'equal distance' boundaries where the distance between center points is equal. It's worth noting that this model would "misclassify" roughly 8% of the total data set.

4.2 Evaluating categorical model by calculating classification error

The evaluation function for categorical models used here is simply the fraction of incorrect predictions:

$$J_{cv} = \frac{1}{m} \sum_{i=0}^{m-1} \begin{cases} 1, & \text{if } \hat{y}^{(i)} \neq y^{(i)} \\ 0, & \text{otherwise} \end{cases}$$

Exercise 2

Below, complete the routine to calculate classification error. Note, in this lab, target

values are the index of the category and are not [one-hot encoded](#).

```
In [ ]: # UNQ_C2
# GRADED CELL: eval_cat_err
def eval_cat_err(y, yhat):
    """
    Calculate the categorization error
    Args:
        y      : (ndarray Shape (m,) or (m,1)) target value of each example
        yhat   : (ndarray Shape (m,) or (m,1)) predicted value of each example
    Returns:|
        cerr: (scalar)
    """
    m = len(y)
    incorrect = 0
    for i in range(m):
        ## START CODE HERE ##
        if(yhat[i]!=y[i]):
            incorrect+=1
    cerr= incorrect/m

    ## END CODE HERE ##

    return(cerr)
```

```
In [ ]: y_hat = np.array([1, 2, 0])
y_tmp = np.array([1, 2, 3])
print(f"categorization error {np.squeeze(eval_cat_err(y_hat, y_tmp)):0.3f}, expected:0.333")
y_hat = np.array([[1], [2], [0], [3]])
y_tmp = np.array([[1], [2], [1], [3]])
print(f"categorization error {np.squeeze(eval_cat_err(y_hat, y_tmp)):0.3f}, expected:0.250")

# BEGIN UNIT TEST
test_eval_cat_err(eval_cat_err)
# END UNIT TEST
```

categorization error 0.333, expected:0.333

categorization error 0.250, expected:0.250

All tests passed.

► [Click for hints](#)

5 - Model Complexity

Below, you will build two models. A complex model and a simple model. You will evaluate the models to determine if they are likely to overfit or underfit.

5.1 Complex model

Exercise 3

Below, compose a three-layer model:

- Dense layer with 120 units, relu activation

- Dense layer with 40 units, relu activation
- Dense layer with 6 units and a linear activation (not softmax)
Compile using
- loss with `SparseCategoricalCrossentropy` , remember to use `from_logits=True`
- Adam optimizer with learning rate of 0.01.

```
In [ ]: # UNQ_C3
# GRADED CELL: model
import logging
logging.getLogger("tensorflow").setLevel(logging.ERROR)

tf.random.set_seed(1234)
model = Sequential(
    [
        ### START CODE HERE ###
        tf.keras.layers.Dense(120, activation="relu"),
        tf.keras.layers.Dense(40, activation="relu"),
        tf.keras.layers.Dense(6, activation="linear")
        ### END CODE HERE ###

    ], name="Complex"
)
model.compile(
    ### START CODE HERE ###
    loss=SparseCategoricalCrossentropy(from_logits=True),
    optimizer=tf.keras.optimizers.Adam(learning_rate=0.01)
    ### END CODE HERE ###
)
```

```
In [ ]: # BEGIN UNIT TEST
model.fit(
    X_train, y_train,
    epochs=1000
)
# END UNIT TEST
```

```
Epoch 1/1000
13/13 [=====] - 1s 2ms/step - loss: 1.1503
Epoch 2/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4341
Epoch 3/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3314
Epoch 4/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2816
Epoch 5/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2794
Epoch 6/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2915
Epoch 7/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2524
Epoch 8/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2274
Epoch 9/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2281
Epoch 10/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1956
Epoch 11/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2111
Epoch 12/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2010
Epoch 13/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2367
Epoch 14/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2203
Epoch 15/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2199
Epoch 16/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1998
Epoch 17/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2034
Epoch 18/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2036
Epoch 19/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2177
Epoch 20/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2045
Epoch 21/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2223
Epoch 22/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2567
Epoch 23/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2087
Epoch 24/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1996
Epoch 25/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2064
Epoch 26/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1947
Epoch 27/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1970
Epoch 28/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1973
Epoch 29/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2175
Epoch 30/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2189
```

```
Epoch 31/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1819
Epoch 32/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1881
Epoch 33/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1842
Epoch 34/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2144
Epoch 35/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1975
Epoch 36/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1804
Epoch 37/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1821
Epoch 38/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1739
Epoch 39/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1956
Epoch 40/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1853
Epoch 41/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2061
Epoch 42/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2003
Epoch 43/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1935
Epoch 44/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2130
Epoch 45/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2208
Epoch 46/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1851
Epoch 47/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1864
Epoch 48/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1801
Epoch 49/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1775
Epoch 50/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1810
Epoch 51/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2039
Epoch 52/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1938
Epoch 53/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2042
Epoch 54/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1785
Epoch 55/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1876
Epoch 56/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1858
Epoch 57/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1983
Epoch 58/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1914
Epoch 59/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1831
Epoch 60/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1893
```



```
Epoch 61/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1956
Epoch 62/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1712
Epoch 63/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1617
Epoch 64/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2092
Epoch 65/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2040
Epoch 66/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1930
Epoch 67/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2270
Epoch 68/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2420
Epoch 69/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1974
Epoch 70/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1643
Epoch 71/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1964
Epoch 72/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1714
Epoch 73/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1751
Epoch 74/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1767
Epoch 75/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1592
Epoch 76/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1582
Epoch 77/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1654
Epoch 78/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1588
Epoch 79/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1599
Epoch 80/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1813
Epoch 81/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1895
Epoch 82/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1795
Epoch 83/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1686
Epoch 84/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 85/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1698
Epoch 86/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1628
Epoch 87/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1633
Epoch 88/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1751
Epoch 89/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1609
Epoch 90/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1508
```

```
Epoch 91/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1496
Epoch 92/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1526
Epoch 93/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1458
Epoch 94/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1572
Epoch 95/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1612
Epoch 96/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1686
Epoch 97/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1761
Epoch 98/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 99/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
Epoch 100/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1623
Epoch 101/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1719
Epoch 102/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1694
Epoch 103/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1943
Epoch 104/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1659
Epoch 105/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1483
Epoch 106/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1469
Epoch 107/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1573
Epoch 108/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1424
Epoch 109/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1461
Epoch 110/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1380
Epoch 111/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1501
Epoch 112/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1600
Epoch 113/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1772
Epoch 114/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1383
Epoch 115/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1376
Epoch 116/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1469
Epoch 117/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1472
Epoch 118/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1350
Epoch 119/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1445
Epoch 120/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1409
```

```
Epoch 121/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1472
Epoch 122/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1635
Epoch 123/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1513
Epoch 124/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1321
Epoch 125/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1295
Epoch 126/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1487
Epoch 127/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1315
Epoch 128/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1369
Epoch 129/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1310
Epoch 130/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1312
Epoch 131/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1329
Epoch 132/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1361
Epoch 133/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1402
Epoch 134/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1340
Epoch 135/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1311
Epoch 136/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1326
Epoch 137/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1205
Epoch 138/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1439
Epoch 139/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1393
Epoch 140/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1376
Epoch 141/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1292
Epoch 142/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1179
Epoch 143/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1268
Epoch 144/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1298
Epoch 145/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1460
Epoch 146/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1335
Epoch 147/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1281
Epoch 148/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1324
Epoch 149/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1326
Epoch 150/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1330
```

```
Epoch 151/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1175
Epoch 152/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1244
Epoch 153/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1333
Epoch 154/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1327
Epoch 155/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1255
Epoch 156/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1248
Epoch 157/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1308
Epoch 158/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1294
Epoch 159/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1388
Epoch 160/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1403
Epoch 161/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1164
Epoch 162/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1309
Epoch 163/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1270
Epoch 164/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1367
Epoch 165/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1256
Epoch 166/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1183
Epoch 167/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1216
Epoch 168/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1329
Epoch 169/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1330
Epoch 170/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1827
Epoch 171/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1314
Epoch 172/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1165
Epoch 173/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1142
Epoch 174/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1313
Epoch 175/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1077
Epoch 176/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1271
Epoch 177/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1210
Epoch 178/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1406
Epoch 179/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1488
Epoch 180/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1331
```

```
Epoch 181/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1329
Epoch 182/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1372
Epoch 183/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1286
Epoch 184/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1138
Epoch 185/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1016
Epoch 186/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1009
Epoch 187/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1013
Epoch 188/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1040
Epoch 189/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1026
Epoch 190/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1084
Epoch 191/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1119
Epoch 192/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1295
Epoch 193/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1174
Epoch 194/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1155
Epoch 195/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0975
Epoch 196/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0976
Epoch 197/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1005
Epoch 198/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1099
Epoch 199/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1025
Epoch 200/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1155
Epoch 201/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0964
Epoch 202/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1016
Epoch 203/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0876
Epoch 204/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0946
Epoch 205/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1032
Epoch 206/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1144
Epoch 207/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1608
Epoch 208/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1598
Epoch 209/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1362
Epoch 210/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1179
```

```
Epoch 211/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1276
Epoch 212/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1035
Epoch 213/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1074
Epoch 214/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1063
Epoch 215/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0937
Epoch 216/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0920
Epoch 217/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1010
Epoch 218/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1071
Epoch 219/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1246
Epoch 220/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1037
Epoch 221/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0996
Epoch 222/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1217
Epoch 223/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1216
Epoch 224/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1156
Epoch 225/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1078
Epoch 226/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1003
Epoch 227/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0999
Epoch 228/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0897
Epoch 229/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0883
Epoch 230/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0867
Epoch 231/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0955
Epoch 232/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0901
Epoch 233/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0944
Epoch 234/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1002
Epoch 235/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1139
Epoch 236/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0888
Epoch 237/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1017
Epoch 238/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1143
Epoch 239/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1038
Epoch 240/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0821
```

```
Epoch 241/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0840
Epoch 242/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0934
Epoch 243/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0860
Epoch 244/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0856
Epoch 245/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0963
Epoch 246/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1097
Epoch 247/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1196
Epoch 248/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1253
Epoch 249/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0871
Epoch 250/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0911
Epoch 251/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0896
Epoch 252/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0813
Epoch 253/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0974
Epoch 254/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0939
Epoch 255/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0984
Epoch 256/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1035
Epoch 257/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1074
Epoch 258/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1225
Epoch 259/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0915
Epoch 260/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1141
Epoch 261/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1209
Epoch 262/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1079
Epoch 263/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0940
Epoch 264/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0972
Epoch 265/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0999
Epoch 266/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0997
Epoch 267/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0869
Epoch 268/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0799
Epoch 269/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0782
Epoch 270/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0790
```

```
Epoch 271/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0893
Epoch 272/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0999
Epoch 273/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0975
Epoch 274/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0796
Epoch 275/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0927
Epoch 276/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0814
Epoch 277/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0840
Epoch 278/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0788
Epoch 279/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0879
Epoch 280/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0769
Epoch 281/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0708
Epoch 282/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0739
Epoch 283/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0718
Epoch 284/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0697
Epoch 285/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0682
Epoch 286/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0922
Epoch 287/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1072
Epoch 288/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0886
Epoch 289/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0779
Epoch 290/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0719
Epoch 291/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0703
Epoch 292/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0824
Epoch 293/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0971
Epoch 294/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0874
Epoch 295/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0891
Epoch 296/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0997
Epoch 297/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0894
Epoch 298/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0744
Epoch 299/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0653
Epoch 300/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0655
```



```
Epoch 301/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0630
Epoch 302/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0831
Epoch 303/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0864
Epoch 304/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0647
Epoch 305/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0641
Epoch 306/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0701
Epoch 307/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0675
Epoch 308/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0653
Epoch 309/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0648
Epoch 310/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0787
Epoch 311/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0951
Epoch 312/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0809
Epoch 313/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1073
Epoch 314/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0685
Epoch 315/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0696
Epoch 316/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0629
Epoch 317/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0687
Epoch 318/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0656
Epoch 319/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0678
Epoch 320/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0588
Epoch 321/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0674
Epoch 322/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0703
Epoch 323/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0896
Epoch 324/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1106
Epoch 325/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1049
Epoch 326/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0738
Epoch 327/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0779
Epoch 328/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1080
Epoch 329/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1358
Epoch 330/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0985
```

```
Epoch 331/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0817
Epoch 332/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0625
Epoch 333/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0657
Epoch 334/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0751
Epoch 335/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1074
Epoch 336/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0959
Epoch 337/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0917
Epoch 338/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0845
Epoch 339/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0632
Epoch 340/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0656
Epoch 341/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0807
Epoch 342/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0882
Epoch 343/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0715
Epoch 344/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0848
Epoch 345/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0860
Epoch 346/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0836
Epoch 347/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0750
Epoch 348/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1218
Epoch 349/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1079
Epoch 350/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1042
Epoch 351/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0914
Epoch 352/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0905
Epoch 353/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0892
Epoch 354/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0761
Epoch 355/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0719
Epoch 356/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0565
Epoch 357/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0701
Epoch 358/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1002
Epoch 359/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0660
Epoch 360/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0736
```

```
Epoch 361/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0723
Epoch 362/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0661
Epoch 363/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0558
Epoch 364/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0561
Epoch 365/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0539
Epoch 366/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0491
Epoch 367/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0485
Epoch 368/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0512
Epoch 369/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0514
Epoch 370/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0636
Epoch 371/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0557
Epoch 372/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0496
Epoch 373/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0529
Epoch 374/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0445
Epoch 375/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0471
Epoch 376/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0421
Epoch 377/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0423
Epoch 378/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0403
Epoch 379/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0395
Epoch 380/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0455
Epoch 381/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0497
Epoch 382/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0582
Epoch 383/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0475
Epoch 384/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0384
Epoch 385/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0468
Epoch 386/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0501
Epoch 387/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0483
Epoch 388/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0624
Epoch 389/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0914
Epoch 390/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0899
```

```
Epoch 391/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0818
Epoch 392/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0845
Epoch 393/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0812
Epoch 394/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1069
Epoch 395/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0956
Epoch 396/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0853
Epoch 397/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0786
Epoch 398/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0687
Epoch 399/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0643
Epoch 400/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0531
Epoch 401/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0495
Epoch 402/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0519
Epoch 403/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0471
Epoch 404/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0388
Epoch 405/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0367
Epoch 406/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0365
Epoch 407/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0366
Epoch 408/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0387
Epoch 409/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0379
Epoch 410/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0470
Epoch 411/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0405
Epoch 412/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0405
Epoch 413/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0406
Epoch 414/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0378
Epoch 415/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0394
Epoch 416/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0360
Epoch 417/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0374
Epoch 418/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0359
Epoch 419/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0364
Epoch 420/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0361
```

```
Epoch 421/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0652
Epoch 422/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0407
Epoch 423/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0416
Epoch 424/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0657
Epoch 425/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0335
Epoch 426/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0339
Epoch 427/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0306
Epoch 428/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0387
Epoch 429/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0403
Epoch 430/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0614
Epoch 431/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0643
Epoch 432/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0619
Epoch 433/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0518
Epoch 434/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0359
Epoch 435/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0300
Epoch 436/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0420
Epoch 437/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0394
Epoch 438/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0334
Epoch 439/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0313
Epoch 440/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0347
Epoch 441/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0309
Epoch 442/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0317
Epoch 443/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0365
Epoch 444/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0430
Epoch 445/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0310
Epoch 446/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0293
Epoch 447/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0274
Epoch 448/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0293
Epoch 449/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0318
Epoch 450/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0352
```

```
Epoch 451/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0792
Epoch 452/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0523
Epoch 453/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0546
Epoch 454/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0676
Epoch 455/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0931
Epoch 456/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0599
Epoch 457/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0450
Epoch 458/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0348
Epoch 459/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0330
Epoch 460/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0387
Epoch 461/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0457
Epoch 462/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0534
Epoch 463/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0359
Epoch 464/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0371
Epoch 465/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0375
Epoch 466/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0508
Epoch 467/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0896
Epoch 468/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0597
Epoch 469/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0565
Epoch 470/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0509
Epoch 471/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0495
Epoch 472/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0387
Epoch 473/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0360
Epoch 474/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0279
Epoch 475/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0339
Epoch 476/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0339
Epoch 477/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0437
Epoch 478/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0497
Epoch 479/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1047
Epoch 480/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0777
```

```
Epoch 481/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0797
Epoch 482/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0607
Epoch 483/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0443
Epoch 484/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0566
Epoch 485/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0435
Epoch 486/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0343
Epoch 487/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0362
Epoch 488/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0275
Epoch 489/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0310
Epoch 490/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0505
Epoch 491/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0455
Epoch 492/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0421
Epoch 493/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0445
Epoch 494/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0386
Epoch 495/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0468
Epoch 496/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0398
Epoch 497/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0451
Epoch 498/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0383
Epoch 499/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0920
Epoch 500/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0802
Epoch 501/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1314
Epoch 502/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0755
Epoch 503/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0906
Epoch 504/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0791
Epoch 505/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0580
Epoch 506/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1018
Epoch 507/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2363
Epoch 508/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1359
Epoch 509/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1519
Epoch 510/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1039
```

```
Epoch 511/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0659
Epoch 512/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0474
Epoch 513/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0599
Epoch 514/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0494
Epoch 515/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0470
Epoch 516/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0343
Epoch 517/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0329
Epoch 518/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0343
Epoch 519/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0379
Epoch 520/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0273
Epoch 521/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0272
Epoch 522/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0333
Epoch 523/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0273
Epoch 524/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0262
Epoch 525/1000
13/13 [=====] - 0s 3ms/step - loss: 0.0282
Epoch 526/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0266
Epoch 527/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0284
Epoch 528/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0275
Epoch 529/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0278
Epoch 530/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0279
Epoch 531/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0245
Epoch 532/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0338
Epoch 533/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0303
Epoch 534/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0479
Epoch 535/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0376
Epoch 536/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0280
Epoch 537/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0336
Epoch 538/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0266
Epoch 539/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0234
Epoch 540/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0260
```



```
Epoch 541/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0245
Epoch 542/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0255
Epoch 543/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0247
Epoch 544/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0243
Epoch 545/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0265
Epoch 546/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0263
Epoch 547/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0250
Epoch 548/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0247
Epoch 549/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0224
Epoch 550/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0253
Epoch 551/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0271
Epoch 552/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0304
Epoch 553/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0314
Epoch 554/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0389
Epoch 555/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0327
Epoch 556/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0447
Epoch 557/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0266
Epoch 558/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0223
Epoch 559/1000
13/13 [=====] - 0s 3ms/step - loss: 0.0234
Epoch 560/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0282
Epoch 561/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0297
Epoch 562/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0345
Epoch 563/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0369
Epoch 564/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0310
Epoch 565/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0351
Epoch 566/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0305
Epoch 567/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0360
Epoch 568/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0368
Epoch 569/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0375
Epoch 570/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0631
```

```
Epoch 571/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0610
Epoch 572/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0430
Epoch 573/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0285
Epoch 574/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0271
Epoch 575/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0253
Epoch 576/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0228
Epoch 577/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0228
Epoch 578/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0232
Epoch 579/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0224
Epoch 580/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0259
Epoch 581/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0247
Epoch 582/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0231
Epoch 583/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0279
Epoch 584/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0294
Epoch 585/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0279
Epoch 586/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0262
Epoch 587/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0216
Epoch 588/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0243
Epoch 589/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0248
Epoch 590/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0255
Epoch 591/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0332
Epoch 592/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0449
Epoch 593/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0513
Epoch 594/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0260
Epoch 595/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0229
Epoch 596/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0253
Epoch 597/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0210
Epoch 598/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0211
Epoch 599/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0206
Epoch 600/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0206
```

```
Epoch 601/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0235
Epoch 602/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0201
Epoch 603/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0188
Epoch 604/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0202
Epoch 605/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0219
Epoch 606/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0201
Epoch 607/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0206
Epoch 608/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0211
Epoch 609/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0183
Epoch 610/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0203
Epoch 611/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0213
Epoch 612/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0203
Epoch 613/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0288
Epoch 614/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0203
Epoch 615/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0211
Epoch 616/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0218
Epoch 617/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0186
Epoch 618/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0223
Epoch 619/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0212
Epoch 620/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0276
Epoch 621/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0374
Epoch 622/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1481
Epoch 623/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0881
Epoch 624/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0619
Epoch 625/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0793
Epoch 626/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1041
Epoch 627/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1286
Epoch 628/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1824
Epoch 629/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1275
Epoch 630/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1181
```

```
Epoch 631/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0887
Epoch 632/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0572
Epoch 633/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0558
Epoch 634/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0499
Epoch 635/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0490
Epoch 636/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0384
Epoch 637/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0639
Epoch 638/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0365
Epoch 639/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0469
Epoch 640/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0680
Epoch 641/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0624
Epoch 642/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0504
Epoch 643/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0486
Epoch 644/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0712
Epoch 645/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0678
Epoch 646/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0546
Epoch 647/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0687
Epoch 648/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0495
Epoch 649/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0851
Epoch 650/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1608
Epoch 651/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0973
Epoch 652/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0367
Epoch 653/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0313
Epoch 654/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0330
Epoch 655/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0258
Epoch 656/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0271
Epoch 657/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0246
Epoch 658/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0289
Epoch 659/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0279
Epoch 660/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0253
```

```
Epoch 661/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0239
Epoch 662/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0254
Epoch 663/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0246
Epoch 664/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0226
Epoch 665/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0220
Epoch 666/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0255
Epoch 667/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0280
Epoch 668/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0310
Epoch 669/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0287
Epoch 670/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0234
Epoch 671/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0280
Epoch 672/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0261
Epoch 673/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0237
Epoch 674/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0230
Epoch 675/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0221
Epoch 676/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0252
Epoch 677/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0262
Epoch 678/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0291
Epoch 679/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0238
Epoch 680/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0482
Epoch 681/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0534
Epoch 682/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0330
Epoch 683/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0443
Epoch 684/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0357
Epoch 685/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0448
Epoch 686/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0584
Epoch 687/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0362
Epoch 688/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1029
Epoch 689/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0978
Epoch 690/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1329
```

```
Epoch 691/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0966
Epoch 692/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0743
Epoch 693/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0599
Epoch 694/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0358
Epoch 695/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0327
Epoch 696/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0274
Epoch 697/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0323
Epoch 698/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0234
Epoch 699/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0228
Epoch 700/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0235
Epoch 701/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0244
Epoch 702/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0258
Epoch 703/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0213
Epoch 704/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0293
Epoch 705/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0234
Epoch 706/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0214
Epoch 707/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0201
Epoch 708/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0204
Epoch 709/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0223
Epoch 710/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0215
Epoch 711/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0190
Epoch 712/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0185
Epoch 713/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0204
Epoch 714/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0173
Epoch 715/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0183
Epoch 716/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0251
Epoch 717/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0174
Epoch 718/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0197
Epoch 719/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0163
Epoch 720/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0183
```

```
Epoch 721/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0209
Epoch 722/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0192
Epoch 723/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0203
Epoch 724/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0195
Epoch 725/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0188
Epoch 726/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0192
Epoch 727/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0177
Epoch 728/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0196
Epoch 729/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0162
Epoch 730/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0177
Epoch 731/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0184
Epoch 732/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0250
Epoch 733/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0179
Epoch 734/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0176
Epoch 735/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0181
Epoch 736/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0287
Epoch 737/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0245
Epoch 738/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0574
Epoch 739/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0499
Epoch 740/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1038
Epoch 741/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1267
Epoch 742/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0605
Epoch 743/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0707
Epoch 744/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0895
Epoch 745/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0874
Epoch 746/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0671
Epoch 747/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0594
Epoch 748/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1187
Epoch 749/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0814
Epoch 750/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1195
```

```
Epoch 751/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0706
Epoch 752/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0909
Epoch 753/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0686
Epoch 754/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0512
Epoch 755/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0458
Epoch 756/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0523
Epoch 757/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0419
Epoch 758/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0455
Epoch 759/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0437
Epoch 760/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0380
Epoch 761/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0321
Epoch 762/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0317
Epoch 763/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0343
Epoch 764/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0379
Epoch 765/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0345
Epoch 766/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0359
Epoch 767/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0399
Epoch 768/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0326
Epoch 769/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0506
Epoch 770/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0412
Epoch 771/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0395
Epoch 772/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0520
Epoch 773/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0441
Epoch 774/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0416
Epoch 775/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0449
Epoch 776/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0446
Epoch 777/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0570
Epoch 778/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0458
Epoch 779/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0408
Epoch 780/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0400
```



```
Epoch 781/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0407
Epoch 782/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0294
Epoch 783/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0336
Epoch 784/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0361
Epoch 785/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0330
Epoch 786/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0354
Epoch 787/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0262
Epoch 788/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0272
Epoch 789/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0290
Epoch 790/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0254
Epoch 791/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0286
Epoch 792/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0298
Epoch 793/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0253
Epoch 794/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0284
Epoch 795/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0241
Epoch 796/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0285
Epoch 797/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0289
Epoch 798/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0272
Epoch 799/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0232
Epoch 800/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0259
Epoch 801/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0283
Epoch 802/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0258
Epoch 803/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0261
Epoch 804/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0270
Epoch 805/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0260
Epoch 806/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0306
Epoch 807/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0275
Epoch 808/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0265
Epoch 809/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0284
Epoch 810/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0247
```

```
Epoch 811/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0243
Epoch 812/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0265
Epoch 813/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0311
Epoch 814/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0282
Epoch 815/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0339
Epoch 816/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0305
Epoch 817/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0305
Epoch 818/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0229
Epoch 819/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0249
Epoch 820/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0227
Epoch 821/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0226
Epoch 822/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0240
Epoch 823/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0242
Epoch 824/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0301
Epoch 825/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0271
Epoch 826/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0285
Epoch 827/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0273
Epoch 828/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0276
Epoch 829/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0338
Epoch 830/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0384
Epoch 831/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0318
Epoch 832/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0317
Epoch 833/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0266
Epoch 834/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0265
Epoch 835/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0259
Epoch 836/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0266
Epoch 837/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0253
Epoch 838/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0219
Epoch 839/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0248
Epoch 840/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0268
```

```
Epoch 841/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0244
Epoch 842/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0241
Epoch 843/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0229
Epoch 844/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0242
Epoch 845/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0229
Epoch 846/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0228
Epoch 847/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0225
Epoch 848/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0214
Epoch 849/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0237
Epoch 850/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0242
Epoch 851/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0207
Epoch 852/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0274
Epoch 853/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0248
Epoch 854/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0211
Epoch 855/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0353
Epoch 856/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0474
Epoch 857/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0737
Epoch 858/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0745
Epoch 859/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1224
Epoch 860/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0588
Epoch 861/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1425
Epoch 862/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1201
Epoch 863/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0974
Epoch 864/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0909
Epoch 865/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0741
Epoch 866/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0615
Epoch 867/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0732
Epoch 868/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1278
Epoch 869/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1018
Epoch 870/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1573
```

```
Epoch 871/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1086
Epoch 872/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0884
Epoch 873/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0743
Epoch 874/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0432
Epoch 875/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0406
Epoch 876/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0301
Epoch 877/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0260
Epoch 878/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0336
Epoch 879/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0379
Epoch 880/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0212
Epoch 881/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0219
Epoch 882/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0208
Epoch 883/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0183
Epoch 884/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0191
Epoch 885/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0182
Epoch 886/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0177
Epoch 887/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0188
Epoch 888/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0173
Epoch 889/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0166
Epoch 890/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0178
Epoch 891/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0172
Epoch 892/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0180
Epoch 893/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0177
Epoch 894/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0180
Epoch 895/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0175
Epoch 896/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0178
Epoch 897/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0198
Epoch 898/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0178
Epoch 899/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0188
Epoch 900/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0182
```

```
Epoch 901/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0161
Epoch 902/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0166
Epoch 903/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0206
Epoch 904/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0231
Epoch 905/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0219
Epoch 906/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0329
Epoch 907/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0434
Epoch 908/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0383
Epoch 909/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0190
Epoch 910/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0194
Epoch 911/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0214
Epoch 912/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0171
Epoch 913/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0158
Epoch 914/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0177
Epoch 915/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0193
Epoch 916/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0171
Epoch 917/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0201
Epoch 918/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0145
Epoch 919/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0141
Epoch 920/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0167
Epoch 921/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0145
Epoch 922/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0145
Epoch 923/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0191
Epoch 924/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0155
Epoch 925/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0171
Epoch 926/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0144
Epoch 927/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0151
Epoch 928/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0143
Epoch 929/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0155
Epoch 930/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0152
```

```
Epoch 931/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0152
Epoch 932/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0147
Epoch 933/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0150
Epoch 934/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0156
Epoch 935/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0163
Epoch 936/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0147
Epoch 937/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0147
Epoch 938/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0145
Epoch 939/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0148
Epoch 940/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0166
Epoch 941/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0172
Epoch 942/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0119
Epoch 943/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0162
Epoch 944/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0135
Epoch 945/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0150
Epoch 946/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0140
Epoch 947/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0141
Epoch 948/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0148
Epoch 949/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0164
Epoch 950/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0133
Epoch 951/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0164
Epoch 952/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0155
Epoch 953/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0143
Epoch 954/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0156
Epoch 955/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0170
Epoch 956/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0228
Epoch 957/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0317
Epoch 958/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0366
Epoch 959/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0994
Epoch 960/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0677
```

```
Epoch 961/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2311
Epoch 962/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1645
Epoch 963/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2693
Epoch 964/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2160
Epoch 965/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1742
Epoch 966/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1449
Epoch 967/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0872
Epoch 968/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0784
Epoch 969/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0887
Epoch 970/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0452
Epoch 971/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0604
Epoch 972/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0407
Epoch 973/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0355
Epoch 974/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0322
Epoch 975/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0374
Epoch 976/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0705
Epoch 977/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0615
Epoch 978/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0438
Epoch 979/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0425
Epoch 980/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0349
Epoch 981/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0294
Epoch 982/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0289
Epoch 983/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0295
Epoch 984/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0288
Epoch 985/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0302
Epoch 986/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0319
Epoch 987/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0282
Epoch 988/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0272
Epoch 989/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0265
Epoch 990/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0284
```

```

Epoch 991/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0273
Epoch 992/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0272
Epoch 993/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0275
Epoch 994/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0251
Epoch 995/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0237
Epoch 996/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0248
Epoch 997/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0252
Epoch 998/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0250
Epoch 999/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0230
Epoch 1000/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0236

```

Out[]: <keras.src.callbacks.History at 0x1a6bc9f7a90>

```

In [ ]: # BEGIN UNIT TEST
        model.summary()

        model_test(model, classes, X_train.shape[1])
        # END UNIT TEST

```

Model: "Complex"

Layer (type)	Output Shape	Param #
dense_3 (Dense)	(None, 120)	360
dense_4 (Dense)	(None, 40)	4840
dense_5 (Dense)	(None, 6)	246

=====
 Total params: 5446 (42.55 KB)
 Trainable params: 5446 (42.55 KB)
 Non-trainable params: 0 (0.00 Byte)

All tests passed!

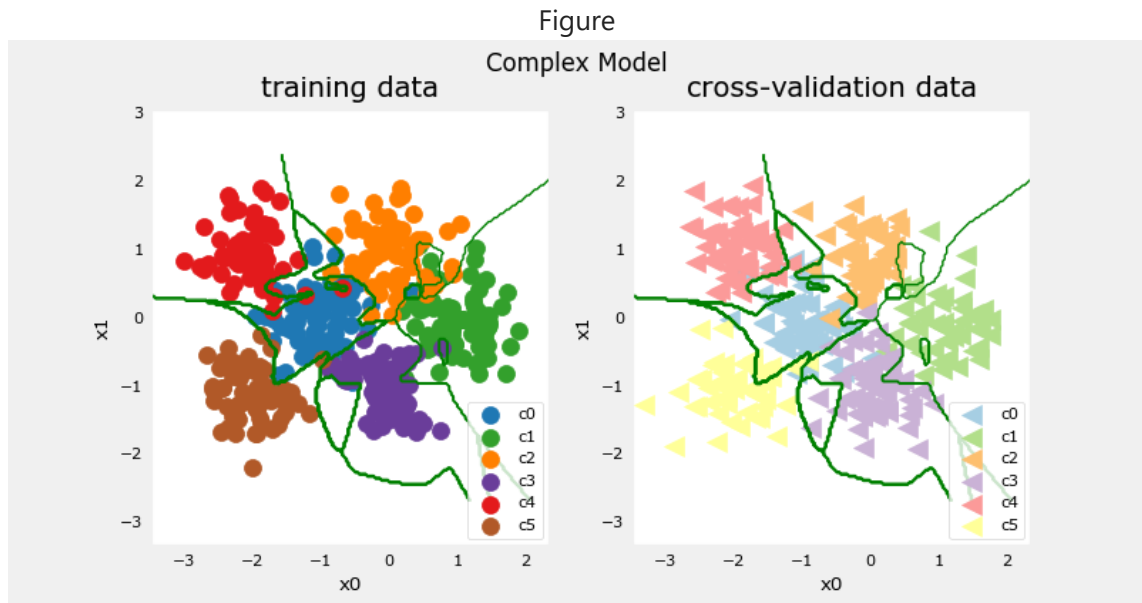
► [Click for hints](#)

```

In [ ]: #make a model for plotting routines to call
        model_predict = lambda X1: np.argmax(tf.nn.softmax(model.predict(X1)).numpy(),ax
        plt_nn(model_predict,X_train,y_train, classes, X_cv, y_cv, suptitle="Complex Mod

1082/1082 [=====] - 1s 798us/step
1082/1082 [=====] - 1s 834us/step

```

This model has worked very hard to capture outliers of each category. As a result, it has miscategorized some of the cross-validation data. Let's calculate the classification error.

```
In [ ]: training_cerr_complex = eval_cat_err(y_train, model_predict(X_train))
cv_cerr_complex = eval_cat_err(y_cv, model_predict(X_cv))
print(f"categorization error, training, complex model: {training_cerr_complex:0.3f}")
print(f"categorization error, cv, complex model: {cv_cerr_complex:0.3f}")
```

```
13/13 [=====] - 0s 1ms/step
10/10 [=====] - 0s 946us/step
categorization error, training, complex model: 0.007
categorization error, cv, complex model: 0.109
```

5.1 Simple model

Now, let's try a simple model

Exercise 4

Below, compose a two-layer model:

- Dense layer with 6 units, relu activation
- Dense layer with 6 units and a linear activation. Compile using
- loss with `SparseCategoricalCrossentropy`, remember to use `from_logits=True`
- Adam optimizer with learning rate of 0.01.

```
In [ ]: # UNQ_C4
# GRADED CELL: model_s

tf.random.set_seed(1234)
model_s = Sequential(
    [
        ### START CODE HERE ###
        tf.keras.layers.Dense(6, activation="relu"),
        tf.keras.layers.Dense(6, activation="linear")
    ]
)
```

```
        ### END CODE HERE ###
    ], name = "Simple"
)
model_s.compile(
    ### START CODE HERE ###
    loss=SparseCategoricalCrossentropy(from_logits=True),
    optimizer=tf.keras.optimizers.Adam(learning_rate=0.01)
    ### START CODE HERE ###
)
)
```

```
In [ ]: import logging
logging.getLogger("tensorflow").setLevel(logging.ERROR)

# BEGIN UNIT TEST
model_s.fit(
    X_train,y_train,
    epochs=1000
)
# END UNIT TEST
```

```
Epoch 1/1000
13/13 [=====] - 0s 1ms/step - loss: 1.6590
Epoch 2/1000
13/13 [=====] - 0s 1ms/step - loss: 1.3981
Epoch 3/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1817
Epoch 4/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9807
Epoch 5/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8124
Epoch 6/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6722
Epoch 7/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5735
Epoch 8/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4977
Epoch 9/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4463
Epoch 10/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4076
Epoch 11/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3809
Epoch 12/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3624
Epoch 13/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3485
Epoch 14/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3317
Epoch 15/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3200
Epoch 16/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3110
Epoch 17/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3031
Epoch 18/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2967
Epoch 19/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2888
Epoch 20/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2830
Epoch 21/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2772
Epoch 22/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2728
Epoch 23/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2698
Epoch 24/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2615
Epoch 25/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2598
Epoch 26/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2544
Epoch 27/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2493
Epoch 28/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2467
Epoch 29/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2466
Epoch 30/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2386
```

```
Epoch 31/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2358
Epoch 32/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2336
Epoch 33/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2314
Epoch 34/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2281
Epoch 35/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2249
Epoch 36/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2232
Epoch 37/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2201
Epoch 38/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2186
Epoch 39/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2187
Epoch 40/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2171
Epoch 41/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2137
Epoch 42/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2145
Epoch 43/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2121
Epoch 44/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2132
Epoch 45/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2136
Epoch 46/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2115
Epoch 47/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2104
Epoch 48/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2042
Epoch 49/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2048
Epoch 50/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2046
Epoch 51/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2039
Epoch 52/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2018
Epoch 53/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2010
Epoch 54/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2018
Epoch 55/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1992
Epoch 56/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1994
Epoch 57/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2015
Epoch 58/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1972
Epoch 59/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2012
Epoch 60/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2011
```

```
Epoch 61/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1990
Epoch 62/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1979
Epoch 63/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2015
Epoch 64/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1979
Epoch 65/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2030
Epoch 66/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1982
Epoch 67/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2008
Epoch 68/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1953
Epoch 69/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1979
Epoch 70/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1933
Epoch 71/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1945
Epoch 72/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1965
Epoch 73/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1952
Epoch 74/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1972
Epoch 75/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1926
Epoch 76/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1926
Epoch 77/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1938
Epoch 78/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1909
Epoch 79/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1919
Epoch 80/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1942
Epoch 81/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1880
Epoch 82/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1914
Epoch 83/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1904
Epoch 84/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1923
Epoch 85/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1924
Epoch 86/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1958
Epoch 87/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1907
Epoch 88/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1911
Epoch 89/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1905
Epoch 90/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1885
```

```
Epoch 91/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1886
Epoch 92/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1897
Epoch 93/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1885
Epoch 94/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1912
Epoch 95/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1921
Epoch 96/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1931
Epoch 97/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1902
Epoch 98/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1939
Epoch 99/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1878
Epoch 100/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1915
Epoch 101/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1908
Epoch 102/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1913
Epoch 103/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1928
Epoch 104/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1884
Epoch 105/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1872
Epoch 106/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1882
Epoch 107/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1861
Epoch 108/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1865
Epoch 109/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1882
Epoch 110/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1882
Epoch 111/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1860
Epoch 112/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1878
Epoch 113/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1853
Epoch 114/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1876
Epoch 115/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1846
Epoch 116/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1881
Epoch 117/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1844
Epoch 118/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1863
Epoch 119/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1860
Epoch 120/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1860
```

```
Epoch 121/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1856
Epoch 122/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1860
Epoch 123/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1848
Epoch 124/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1875
Epoch 125/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1863
Epoch 126/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1855
Epoch 127/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1848
Epoch 128/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1844
Epoch 129/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1829
Epoch 130/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1853
Epoch 131/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1838
Epoch 132/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1819
Epoch 133/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1840
Epoch 134/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1843
Epoch 135/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1872
Epoch 136/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1843
Epoch 137/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1820
Epoch 138/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1849
Epoch 139/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1844
Epoch 140/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1827
Epoch 141/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1819
Epoch 142/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1821
Epoch 143/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1828
Epoch 144/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1841
Epoch 145/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1830
Epoch 146/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1833
Epoch 147/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1831
Epoch 148/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1810
Epoch 149/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1813
Epoch 150/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1820
```

```
Epoch 151/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1852
Epoch 152/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1811
Epoch 153/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1837
Epoch 154/1000
13/13 [=====] - 0s 960us/step - loss: 0.1812
Epoch 155/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1815
Epoch 156/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1804
Epoch 157/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1814
Epoch 158/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1813
Epoch 159/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1816
Epoch 160/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1822
Epoch 161/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1853
Epoch 162/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1844
Epoch 163/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1829
Epoch 164/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1823
Epoch 165/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1815
Epoch 166/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1818
Epoch 167/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1854
Epoch 168/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1819
Epoch 169/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1828
Epoch 170/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1825
Epoch 171/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1798
Epoch 172/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1795
Epoch 173/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1829
Epoch 174/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1818
Epoch 175/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1800
Epoch 176/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1777
Epoch 177/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1850
Epoch 178/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1890
Epoch 179/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1811
Epoch 180/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1814
```



```
Epoch 181/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1832
Epoch 182/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1813
Epoch 183/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1794
Epoch 184/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1804
Epoch 185/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1797
Epoch 186/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1792
Epoch 187/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1779
Epoch 188/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1794
Epoch 189/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1821
Epoch 190/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1848
Epoch 191/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1809
Epoch 192/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1808
Epoch 193/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1819
Epoch 194/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1789
Epoch 195/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1785
Epoch 196/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1788
Epoch 197/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1807
Epoch 198/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1803
Epoch 199/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1818
Epoch 200/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1791
Epoch 201/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1794
Epoch 202/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 203/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1795
Epoch 204/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1800
Epoch 205/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1780
Epoch 206/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1806
Epoch 207/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1775
Epoch 208/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1830
Epoch 209/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1788
Epoch 210/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1795
```

```
Epoch 211/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1805
Epoch 212/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1801
Epoch 213/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1787
Epoch 214/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1813
Epoch 215/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1792
Epoch 216/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1826
Epoch 217/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1773
Epoch 218/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1818
Epoch 219/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1796
Epoch 220/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1789
Epoch 221/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1786
Epoch 222/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1790
Epoch 223/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1792
Epoch 224/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1839
Epoch 225/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1790
Epoch 226/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1777
Epoch 227/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1769
Epoch 228/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1796
Epoch 229/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1821
Epoch 230/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1816
Epoch 231/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1777
Epoch 232/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1834
Epoch 233/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1802
Epoch 234/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1816
Epoch 235/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1772
Epoch 236/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1784
Epoch 237/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1816
Epoch 238/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1893
Epoch 239/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1815
Epoch 240/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1773
```

```
Epoch 241/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1789
Epoch 242/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1926
Epoch 243/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1875
Epoch 244/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1801
Epoch 245/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1775
Epoch 246/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1804
Epoch 247/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1779
Epoch 248/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1766
Epoch 249/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1804
Epoch 250/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1770
Epoch 251/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1777
Epoch 252/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1770
Epoch 253/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1784
Epoch 254/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1790
Epoch 255/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1785
Epoch 256/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1777
Epoch 257/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1789
Epoch 258/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1801
Epoch 259/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 260/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1813
Epoch 261/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 262/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1782
Epoch 263/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1778
Epoch 264/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1770
Epoch 265/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1781
Epoch 266/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1759
Epoch 267/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1795
Epoch 268/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1767
Epoch 269/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1774
Epoch 270/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1787
```

```
Epoch 271/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1756
Epoch 272/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1820
Epoch 273/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1809
Epoch 274/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1761
Epoch 275/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1794
Epoch 276/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1749
Epoch 277/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1795
Epoch 278/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1751
Epoch 279/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1804
Epoch 280/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1775
Epoch 281/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1757
Epoch 282/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1773
Epoch 283/1000
13/13 [=====] - 0s 3ms/step - loss: 0.1803
Epoch 284/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1777
Epoch 285/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1767
Epoch 286/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1778
Epoch 287/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1777
Epoch 288/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1814
Epoch 289/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1776
Epoch 290/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 291/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 292/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1762
Epoch 293/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1787
Epoch 294/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1752
Epoch 295/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1853
Epoch 296/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1774
Epoch 297/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1835
Epoch 298/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1799
Epoch 299/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 300/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1796
```

```
Epoch 301/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1762
Epoch 302/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1831
Epoch 303/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1756
Epoch 304/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1839
Epoch 305/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1757
Epoch 306/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1776
Epoch 307/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1768
Epoch 308/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1770
Epoch 309/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1801
Epoch 310/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1821
Epoch 311/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1757
Epoch 312/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1833
Epoch 313/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1741
Epoch 314/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1794
Epoch 315/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1766
Epoch 316/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 317/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1784
Epoch 318/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1796
Epoch 319/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1768
Epoch 320/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1801
Epoch 321/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 322/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1816
Epoch 323/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 324/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1803
Epoch 325/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1787
Epoch 326/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1761
Epoch 327/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1768
Epoch 328/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1826
Epoch 329/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1769
Epoch 330/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1775
```

```
Epoch 331/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1778
Epoch 332/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1756
Epoch 333/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1791
Epoch 334/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1808
Epoch 335/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 336/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1763
Epoch 337/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1791
Epoch 338/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 339/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1774
Epoch 340/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1775
Epoch 341/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1763
Epoch 342/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1764
Epoch 343/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 344/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1763
Epoch 345/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1787
Epoch 346/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1769
Epoch 347/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1757
Epoch 348/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1775
Epoch 349/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1749
Epoch 350/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1779
Epoch 351/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1749
Epoch 352/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1776
Epoch 353/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1785
Epoch 354/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1770
Epoch 355/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1763
Epoch 356/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1766
Epoch 357/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1768
Epoch 358/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1759
Epoch 359/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1788
Epoch 360/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1806
```

```
Epoch 361/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1795
Epoch 362/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1773
Epoch 363/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1799
Epoch 364/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1770
Epoch 365/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1790
Epoch 366/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1765
Epoch 367/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1760
Epoch 368/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1760
Epoch 369/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1792
Epoch 370/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1741
Epoch 371/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1769
Epoch 372/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1746
Epoch 373/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1752
Epoch 374/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1746
Epoch 375/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1752
Epoch 376/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
Epoch 377/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1760
Epoch 378/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1780
Epoch 379/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1794
Epoch 380/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1739
Epoch 381/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1773
Epoch 382/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1763
Epoch 383/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1820
Epoch 384/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 385/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1769
Epoch 386/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1764
Epoch 387/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 388/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1797
Epoch 389/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1787
Epoch 390/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1768
```

```
Epoch 391/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1778
Epoch 392/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
Epoch 393/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1746
Epoch 394/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
Epoch 395/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1744
Epoch 396/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1783
Epoch 397/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1782
Epoch 398/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 399/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1755
Epoch 400/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1777
Epoch 401/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1760
Epoch 402/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1759
Epoch 403/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1752
Epoch 404/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1758
Epoch 405/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 406/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1749
Epoch 407/1000
13/13 [=====] - 0s 959us/step - loss: 0.1766
Epoch 408/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1793
Epoch 409/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1732
Epoch 410/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1793
Epoch 411/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1762
Epoch 412/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1755
Epoch 413/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 414/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1744
Epoch 415/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 416/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1778
Epoch 417/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 418/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 419/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 420/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1757
```



```
Epoch 421/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1741
Epoch 422/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 423/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 424/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1741
Epoch 425/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1789
Epoch 426/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 427/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1746
Epoch 428/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1737
Epoch 429/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1761
Epoch 430/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1756
Epoch 431/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1728
Epoch 432/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 433/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1759
Epoch 434/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1772
Epoch 435/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1767
Epoch 436/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1763
Epoch 437/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1785
Epoch 438/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 439/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 440/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1737
Epoch 441/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1745
Epoch 442/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1778
Epoch 443/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 444/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1774
Epoch 445/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1749
Epoch 446/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1764
Epoch 447/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1781
Epoch 448/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 449/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1737
Epoch 450/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1751
```

```
Epoch 451/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1744
Epoch 452/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1746
Epoch 453/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 454/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 455/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1742
Epoch 456/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
Epoch 457/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1779
Epoch 458/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 459/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 460/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 461/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 462/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1751
Epoch 463/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1753
Epoch 464/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 465/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 466/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1739
Epoch 467/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1760
Epoch 468/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1742
Epoch 469/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1755
Epoch 470/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1783
Epoch 471/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1813
Epoch 472/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 473/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 474/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1800
Epoch 475/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1800
Epoch 476/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 477/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1759
Epoch 478/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 479/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1734
Epoch 480/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1737
```

```
Epoch 481/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1745
Epoch 482/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 483/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1773
Epoch 484/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 485/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1763
Epoch 486/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1739
Epoch 487/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 488/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1744
Epoch 489/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1757
Epoch 490/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1784
Epoch 491/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 492/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 493/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 494/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1753
Epoch 495/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1745
Epoch 496/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1779
Epoch 497/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 498/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1734
Epoch 499/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1737
Epoch 500/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1734
Epoch 501/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1777
Epoch 502/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1751
Epoch 503/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1752
Epoch 504/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1749
Epoch 505/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1776
Epoch 506/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1745
Epoch 507/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 508/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 509/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1768
Epoch 510/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1761
```

```
Epoch 511/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 512/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1745
Epoch 513/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1757
Epoch 514/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 515/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 516/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 517/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 518/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
Epoch 519/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1769
Epoch 520/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 521/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1763
Epoch 522/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1762
Epoch 523/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 524/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1734
Epoch 525/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1741
Epoch 526/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1732
Epoch 527/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 528/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1790
Epoch 529/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1786
Epoch 530/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1739
Epoch 531/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
Epoch 532/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1772
Epoch 533/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 534/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1752
Epoch 535/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 536/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1753
Epoch 537/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1720
Epoch 538/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 539/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1775
Epoch 540/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
```

```
Epoch 541/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 542/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 543/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1767
Epoch 544/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 545/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1752
Epoch 546/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1766
Epoch 547/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1746
Epoch 548/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1761
Epoch 549/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 550/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1751
Epoch 551/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 552/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 553/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 554/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 555/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 556/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1732
Epoch 557/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1779
Epoch 558/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1786
Epoch 559/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1751
Epoch 560/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 561/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1789
Epoch 562/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1718
Epoch 563/1000
13/13 [=====] - 0s 960us/step - loss: 0.1731
Epoch 564/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1729
Epoch 565/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1718
Epoch 566/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1761
Epoch 567/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1744
Epoch 568/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1732
Epoch 569/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1739
Epoch 570/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1777
```

```
Epoch 571/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 572/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 573/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 574/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 575/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1728
Epoch 576/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 577/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1757
Epoch 578/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 579/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1728
Epoch 580/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 581/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1738
Epoch 582/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 583/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1728
Epoch 584/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1756
Epoch 585/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1722
Epoch 586/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1733
Epoch 587/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 588/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 589/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 590/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1802
Epoch 591/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1777
Epoch 592/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 593/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 594/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1742
Epoch 595/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 596/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 597/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 598/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1737
Epoch 599/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1722
Epoch 600/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1741
```

```
Epoch 601/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 602/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1753
Epoch 603/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 604/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 605/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1741
Epoch 606/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1766
Epoch 607/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1753
Epoch 608/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 609/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 610/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 611/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1751
Epoch 612/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 613/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1746
Epoch 614/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 615/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1733
Epoch 616/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 617/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 618/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1782
Epoch 619/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1722
Epoch 620/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 621/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 622/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 623/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1766
Epoch 624/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 625/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1734
Epoch 626/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1742
Epoch 627/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1742
Epoch 628/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1712
Epoch 629/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1749
Epoch 630/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
```

```
Epoch 631/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 632/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1759
Epoch 633/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 634/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1755
Epoch 635/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 636/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 637/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1737
Epoch 638/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1714
Epoch 639/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1768
Epoch 640/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1757
Epoch 641/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1759
Epoch 642/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1721
Epoch 643/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 644/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1766
Epoch 645/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 646/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1757
Epoch 647/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 648/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1737
Epoch 649/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1775
Epoch 650/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 651/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1733
Epoch 652/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1710
Epoch 653/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 654/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
Epoch 655/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 656/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1718
Epoch 657/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1725
Epoch 658/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1755
Epoch 659/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 660/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
```



```
Epoch 661/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 662/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 663/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 664/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1723
Epoch 665/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1718
Epoch 666/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
Epoch 667/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1717
Epoch 668/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1753
Epoch 669/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1784
Epoch 670/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 671/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1715
Epoch 672/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1756
Epoch 673/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1761
Epoch 674/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 675/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1718
Epoch 676/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1722
Epoch 677/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
Epoch 678/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1732
Epoch 679/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1776
Epoch 680/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 681/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 682/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1715
Epoch 683/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 684/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 685/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1752
Epoch 686/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 687/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1724
Epoch 688/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1746
Epoch 689/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1723
Epoch 690/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
```

```
Epoch 691/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
Epoch 692/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 693/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1733
Epoch 694/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1721
Epoch 695/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1718
Epoch 696/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 697/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1737
Epoch 698/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1721
Epoch 699/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1717
Epoch 700/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1760
Epoch 701/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 702/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 703/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1734
Epoch 704/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1719
Epoch 705/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1733
Epoch 706/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1746
Epoch 707/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1701
Epoch 708/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1832
Epoch 709/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1762
Epoch 710/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1753
Epoch 711/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1734
Epoch 712/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
Epoch 713/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 714/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1717
Epoch 715/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1722
Epoch 716/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1773
Epoch 717/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1701
Epoch 718/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 719/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1715
Epoch 720/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1721
```

```
Epoch 721/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1753
Epoch 722/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 723/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 724/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 725/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 726/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 727/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 728/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1715
Epoch 729/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1720
Epoch 730/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 731/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1741
Epoch 732/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1746
Epoch 733/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1726
Epoch 734/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 735/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1732
Epoch 736/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
Epoch 737/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1710
Epoch 738/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 739/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1742
Epoch 740/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1741
Epoch 741/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1752
Epoch 742/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1709
Epoch 743/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 744/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1739
Epoch 745/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1780
Epoch 746/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1728
Epoch 747/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1742
Epoch 748/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1720
Epoch 749/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1734
Epoch 750/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1714
```

```
Epoch 751/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 752/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1721
Epoch 753/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1721
Epoch 754/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1728
Epoch 755/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1744
Epoch 756/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 757/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 758/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1711
Epoch 759/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 760/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1723
Epoch 761/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1716
Epoch 762/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 763/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1751
Epoch 764/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1783
Epoch 765/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 766/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1744
Epoch 767/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 768/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1739
Epoch 769/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 770/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1706
Epoch 771/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1741
Epoch 772/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1713
Epoch 773/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 774/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1763
Epoch 775/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
Epoch 776/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1714
Epoch 777/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1733
Epoch 778/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 779/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1745
Epoch 780/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
```

```
Epoch 781/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 782/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1737
Epoch 783/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 784/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 785/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 786/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1757
Epoch 787/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1749
Epoch 788/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1704
Epoch 789/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1733
Epoch 790/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1757
Epoch 791/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1712
Epoch 792/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1712
Epoch 793/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 794/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1751
Epoch 795/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1707
Epoch 796/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 797/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1723
Epoch 798/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 799/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1720
Epoch 800/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1701
Epoch 801/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 802/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1705
Epoch 803/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1744
Epoch 804/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1744
Epoch 805/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1714
Epoch 806/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 807/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1708
Epoch 808/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1710
Epoch 809/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1712
Epoch 810/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1734
```

```
Epoch 811/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
Epoch 812/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1721
Epoch 813/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 814/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1718
Epoch 815/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1718
Epoch 816/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 817/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 818/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 819/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1728
Epoch 820/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1761
Epoch 821/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1712
Epoch 822/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1763
Epoch 823/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1811
Epoch 824/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1756
Epoch 825/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 826/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1719
Epoch 827/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 828/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 829/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 830/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1709
Epoch 831/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1744
Epoch 832/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1706
Epoch 833/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 834/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1699
Epoch 835/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1709
Epoch 836/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1699
Epoch 837/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1746
Epoch 838/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1713
Epoch 839/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1714
Epoch 840/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1731
```

```
Epoch 841/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 842/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1764
Epoch 843/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1711
Epoch 844/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1721
Epoch 845/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1723
Epoch 846/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1724
Epoch 847/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 848/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1709
Epoch 849/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1731
Epoch 850/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1721
Epoch 851/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 852/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1751
Epoch 853/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1724
Epoch 854/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
Epoch 855/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1707
Epoch 856/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1721
Epoch 857/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1707
Epoch 858/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 859/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1701
Epoch 860/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1712
Epoch 861/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1739
Epoch 862/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1710
Epoch 863/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 864/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 865/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1709
Epoch 866/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 867/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1713
Epoch 868/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1722
Epoch 869/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1713
Epoch 870/1000
13/13 [=====] - 0s 3ms/step - loss: 0.1729
```

```
Epoch 871/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1720
Epoch 872/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1703
Epoch 873/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 874/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1715
Epoch 875/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1714
Epoch 876/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1711
Epoch 877/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1745
Epoch 878/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1762
Epoch 879/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1741
Epoch 880/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1713
Epoch 881/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
Epoch 882/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1775
Epoch 883/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 884/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1714
Epoch 885/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1709
Epoch 886/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1713
Epoch 887/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 888/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1709
Epoch 889/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1710
Epoch 890/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1734
Epoch 891/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1713
Epoch 892/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1721
Epoch 893/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1724
Epoch 894/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 895/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1717
Epoch 896/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 897/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1734
Epoch 898/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 899/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1768
Epoch 900/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1701
```



```
Epoch 901/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1717
Epoch 902/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1732
Epoch 903/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1715
Epoch 904/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 905/1000
13/13 [=====] - 0s 4ms/step - loss: 0.1720
Epoch 906/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1775
Epoch 907/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1739
Epoch 908/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1716
Epoch 909/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1690
Epoch 910/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
Epoch 911/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1719
Epoch 912/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1708
Epoch 913/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 914/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1699
Epoch 915/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
Epoch 916/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1723
Epoch 917/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1732
Epoch 918/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1697
Epoch 919/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1821
Epoch 920/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1764
Epoch 921/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1714
Epoch 922/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1715
Epoch 923/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1722
Epoch 924/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1713
Epoch 925/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1711
Epoch 926/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1722
Epoch 927/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 928/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1698
Epoch 929/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1732
Epoch 930/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
```

```
Epoch 931/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 932/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 933/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1758
Epoch 934/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1728
Epoch 935/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1728
Epoch 936/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1719
Epoch 937/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1718
Epoch 938/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1726
Epoch 939/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1694
Epoch 940/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1712
Epoch 941/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1712
Epoch 942/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 943/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1700
Epoch 944/1000
13/13 [=====] - 0s 3ms/step - loss: 0.1766
Epoch 945/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1719
Epoch 946/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1691
Epoch 947/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1781
Epoch 948/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1753
Epoch 949/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1690
Epoch 950/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1696
Epoch 951/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1764
Epoch 952/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1720
Epoch 953/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1774
Epoch 954/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1723
Epoch 955/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1688
Epoch 956/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1713
Epoch 957/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1723
Epoch 958/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1756
Epoch 959/1000
13/13 [=====] - 0s 3ms/step - loss: 0.1692
Epoch 960/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
```

```
Epoch 961/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1690
Epoch 962/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1717
Epoch 963/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1761
Epoch 964/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1712
Epoch 965/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 966/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1705
Epoch 967/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1731
Epoch 968/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 969/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1723
Epoch 970/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1704
Epoch 971/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1699
Epoch 972/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1718
Epoch 973/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1713
Epoch 974/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1701
Epoch 975/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1731
Epoch 976/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1710
Epoch 977/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1719
Epoch 978/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1692
Epoch 979/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1717
Epoch 980/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1700
Epoch 981/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1701
Epoch 982/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1742
Epoch 983/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 984/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1708
Epoch 985/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1693
Epoch 986/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 987/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1697
Epoch 988/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 989/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 990/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1706
```

```

Epoch 991/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1705
Epoch 992/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1715
Epoch 993/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 994/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1712
Epoch 995/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 996/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 997/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1739
Epoch 998/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1757
Epoch 999/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1778
Epoch 1000/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1660

```

Out[]: <keras.src.callbacks.History at 0x1a6bf682210>

```

In [ ]: # BEGIN UNIT TEST
        model_s.summary()

        model_s_test(model_s, classes, X_train.shape[1])
        # END UNIT TEST

```

Model: "Simple"

Layer (type)	Output Shape	Param #
=====		
dense_6 (Dense)	(None, 6)	18
dense_7 (Dense)	(None, 6)	42
=====		
Total params: 60 (480.00 Byte)		
Trainable params: 60 (480.00 Byte)		
Non-trainable params: 0 (0.00 Byte)		

All tests passed!

► [Click for hints](#)

```

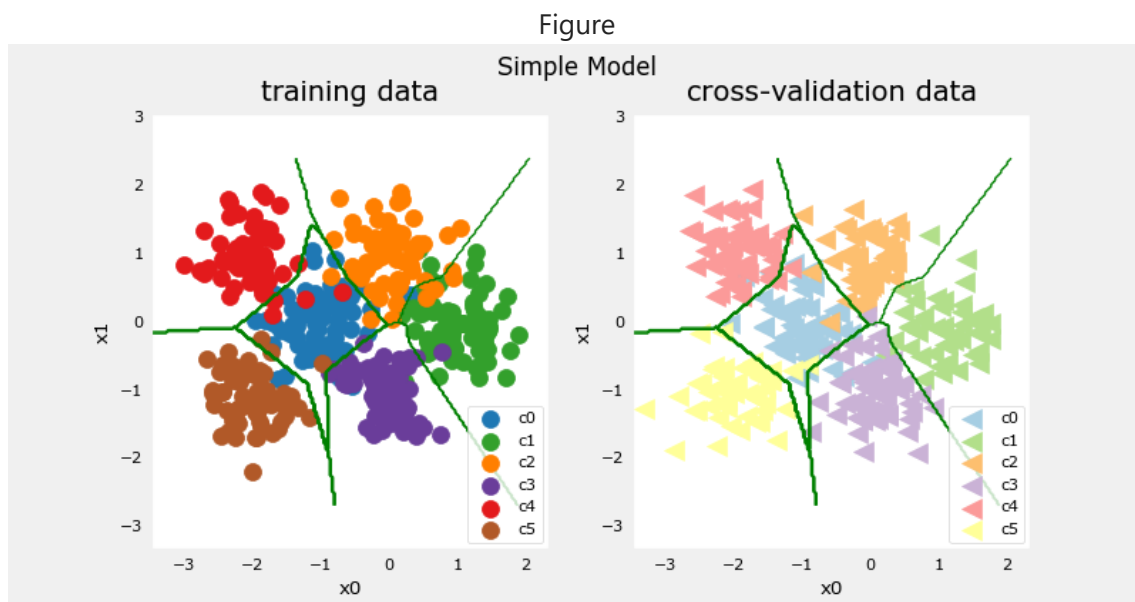
In [ ]: #make a model for plotting routines to call
        model_predict_s = lambda X1: np.argmax(tf.nn.softmax(model_s.predict(X1)).numpy(
        plt_nn(model_predict_s,X_train,y_train, classes, X_cv, y_cv, suptitle="Simple Mo

```

```

1082/1082 [=====] - 1s 818us/step
1082/1082 [=====] - 1s 783us/step

```



This simple models does pretty well. Let's calculate the classification error.

```
In [ ]: training_cerr_simple = eval_cat_err(y_train, model_predict_s(X_train))
cv_cerr_simple = eval_cat_err(y_cv, model_predict_s(X_cv))
print(f"categoryzation error, training, simple model, {training_cerr_simple:0.3f}")
print(f"categoryzation error, cv, simple model, {cv_cerr_simple:0.3f}, com
```

```
13/13 [=====] - 0s 876us/step
10/10 [=====] - 0s 946us/step
categoryzation error, training, simple model, 0.065, complex model: 0.007
categoryzation error, cv, simple model, 0.059, complex model: 0.109
```

Our simple model has a little higher classification error on training data but does better on cross-validation data than the more complex model.

6 - Regularization

As in the case of polynomial regression, one can apply regularization to moderate the impact of a more complex model. Let's try this below.

Exercise 5

Reconstruct your complex model, but this time include regularization. Below, compose a three-layer model:

- Dense layer with 120 units, relu activation,
kernel_regularizer=tf.keras.regularizers.l2(0.1)
- Dense layer with 40 units, relu activation,
kernel_regularizer=tf.keras.regularizers.l2(0.1)
- Dense layer with 6 units and a linear activation. Compile using
- loss with SparseCategoricalCrossentropy , remember to use
from_logits=True
- Adam optimizer with learning rate of 0.01.

```
In [ ]: # UNQ_C5
# GRADED CELL: model_r

tf.random.set_seed(1234)
model_r = Sequential(
    [
        ### START CODE HERE ###
        tf.keras.layers.Dense(120, activation="relu", kernel_regularizer=tf.kera
        tf.keras.layers.Dense(40, activation="relu", kernel_regularizer=tf.keras
        tf.keras.layers.Dense(6, activation="linear")

        ### START CODE HERE ###
    ], name= None
)
model_r.compile(
    ### START CODE HERE ###
    loss=SparseCategoricalCrossentropy(from_logits=True),
    optimizer=tf.keras.optimizers.Adam(learning_rate=0.01)
    ### START CODE HERE ###
)
```

```
In [ ]: # BEGIN UNIT TEST
model_r.fit(
    X_train, y_train,
    epochs=1000
)
# END UNIT TEST
```

```
Epoch 1/1000
13/13 [=====] - 0s 1ms/step - loss: 4.3957
Epoch 2/1000
13/13 [=====] - 0s 1ms/step - loss: 1.6385
Epoch 3/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2759
Epoch 4/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0445
Epoch 5/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9661
Epoch 6/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9366
Epoch 7/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9166
Epoch 8/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8712
Epoch 9/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7954
Epoch 10/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7588
Epoch 11/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7451
Epoch 12/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7443
Epoch 13/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7499
Epoch 14/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7385
Epoch 15/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7028
Epoch 16/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7057
Epoch 17/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7021
Epoch 18/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7002
Epoch 19/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6817
Epoch 20/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6598
Epoch 21/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6523
Epoch 22/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6647
Epoch 23/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6521
Epoch 24/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6397
Epoch 25/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6648
Epoch 26/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7657
Epoch 27/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6353
Epoch 28/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6080
Epoch 29/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5974
Epoch 30/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6129
```

```
Epoch 31/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6112
Epoch 32/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6275
Epoch 33/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6191
Epoch 34/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6453
Epoch 35/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6242
Epoch 36/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6089
Epoch 37/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5771
Epoch 38/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5651
Epoch 39/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5653
Epoch 40/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5660
Epoch 41/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5785
Epoch 42/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5603
Epoch 43/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5700
Epoch 44/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5715
Epoch 45/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5712
Epoch 46/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5558
Epoch 47/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5225
Epoch 48/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5641
Epoch 49/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5535
Epoch 50/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5280
Epoch 51/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5388
Epoch 52/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5255
Epoch 53/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5331
Epoch 54/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5138
Epoch 55/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5376
Epoch 56/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5089
Epoch 57/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5211
Epoch 58/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5122
Epoch 59/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5333
Epoch 60/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5538
```



```
Epoch 61/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5426
Epoch 62/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5264
Epoch 63/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5029
Epoch 64/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5295
Epoch 65/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5117
Epoch 66/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5064
Epoch 67/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5039
Epoch 68/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5051
Epoch 69/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4924
Epoch 70/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4915
Epoch 71/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4879
Epoch 72/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4835
Epoch 73/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4961
Epoch 74/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5136
Epoch 75/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4935
Epoch 76/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4892
Epoch 77/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4809
Epoch 78/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4967
Epoch 79/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5173
Epoch 80/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4960
Epoch 81/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5038
Epoch 82/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4812
Epoch 83/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4727
Epoch 84/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4615
Epoch 85/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4740
Epoch 86/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4714
Epoch 87/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4979
Epoch 88/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4779
Epoch 89/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4683
Epoch 90/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4578
```

```
Epoch 91/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4790
Epoch 92/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4703
Epoch 93/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4588
Epoch 94/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4506
Epoch 95/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4633
Epoch 96/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4481
Epoch 97/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4585
Epoch 98/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4628
Epoch 99/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4855
Epoch 100/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4740
Epoch 101/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4676
Epoch 102/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4573
Epoch 103/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4624
Epoch 104/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4533
Epoch 105/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4799
Epoch 106/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4363
Epoch 107/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4596
Epoch 108/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4723
Epoch 109/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4566
Epoch 110/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4518
Epoch 111/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4501
Epoch 112/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4459
Epoch 113/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4372
Epoch 114/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4359
Epoch 115/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4318
Epoch 116/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4410
Epoch 117/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4570
Epoch 118/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4465
Epoch 119/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4566
Epoch 120/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4689
```

```
Epoch 121/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4980
Epoch 122/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4561
Epoch 123/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4479
Epoch 124/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4363
Epoch 125/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4274
Epoch 126/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4317
Epoch 127/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4422
Epoch 128/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4318
Epoch 129/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4381
Epoch 130/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4316
Epoch 131/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4447
Epoch 132/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4256
Epoch 133/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4178
Epoch 134/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4387
Epoch 135/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4378
Epoch 136/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4410
Epoch 137/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4251
Epoch 138/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4368
Epoch 139/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4453
Epoch 140/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4523
Epoch 141/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4210
Epoch 142/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4129
Epoch 143/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4276
Epoch 144/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4342
Epoch 145/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4198
Epoch 146/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4160
Epoch 147/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4505
Epoch 148/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4309
Epoch 149/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4167
Epoch 150/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4168
```

```
Epoch 151/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4146
Epoch 152/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4124
Epoch 153/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4349
Epoch 154/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4181
Epoch 155/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4199
Epoch 156/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4263
Epoch 157/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4190
Epoch 158/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4141
Epoch 159/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4014
Epoch 160/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4224
Epoch 161/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4327
Epoch 162/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4227
Epoch 163/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4074
Epoch 164/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4226
Epoch 165/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4425
Epoch 166/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4482
Epoch 167/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4703
Epoch 168/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4375
Epoch 169/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4186
Epoch 170/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4288
Epoch 171/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4215
Epoch 172/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4144
Epoch 173/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4318
Epoch 174/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4396
Epoch 175/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4152
Epoch 176/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4337
Epoch 177/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4186
Epoch 178/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4040
Epoch 179/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4152
Epoch 180/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4046
```

```
Epoch 181/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4258
Epoch 182/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4131
Epoch 183/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4035
Epoch 184/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3936
Epoch 185/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3985
Epoch 186/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4011
Epoch 187/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4093
Epoch 188/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4101
Epoch 189/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3929
Epoch 190/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3916
Epoch 191/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4023
Epoch 192/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4019
Epoch 193/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4047
Epoch 194/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4086
Epoch 195/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3952
Epoch 196/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3889
Epoch 197/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4095
Epoch 198/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3921
Epoch 199/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3978
Epoch 200/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3973
Epoch 201/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4166
Epoch 202/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3909
Epoch 203/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3912
Epoch 204/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4019
Epoch 205/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4405
Epoch 206/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4224
Epoch 207/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4018
Epoch 208/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4065
Epoch 209/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4248
Epoch 210/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4032
```

```
Epoch 211/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4194
Epoch 212/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4082
Epoch 213/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4010
Epoch 214/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3999
Epoch 215/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3888
Epoch 216/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4042
Epoch 217/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3913
Epoch 218/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4106
Epoch 219/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3892
Epoch 220/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3959
Epoch 221/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3801
Epoch 222/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4028
Epoch 223/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3964
Epoch 224/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4299
Epoch 225/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4237
Epoch 226/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4101
Epoch 227/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4186
Epoch 228/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3803
Epoch 229/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3945
Epoch 230/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4001
Epoch 231/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3964
Epoch 232/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4035
Epoch 233/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3860
Epoch 234/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3831
Epoch 235/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3813
Epoch 236/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3857
Epoch 237/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3834
Epoch 238/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4174
Epoch 239/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4112
Epoch 240/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3876
```

```
Epoch 241/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3877
Epoch 242/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3828
Epoch 243/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3809
Epoch 244/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3945
Epoch 245/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3920
Epoch 246/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3981
Epoch 247/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3751
Epoch 248/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3839
Epoch 249/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3909
Epoch 250/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3884
Epoch 251/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4065
Epoch 252/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3899
Epoch 253/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3841
Epoch 254/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4017
Epoch 255/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3991
Epoch 256/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3780
Epoch 257/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4005
Epoch 258/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3823
Epoch 259/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3875
Epoch 260/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3827
Epoch 261/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3977
Epoch 262/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4582
Epoch 263/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4204
Epoch 264/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3890
Epoch 265/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3959
Epoch 266/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4224
Epoch 267/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4386
Epoch 268/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4197
Epoch 269/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3812
Epoch 270/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3768
```

```
Epoch 271/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3805
Epoch 272/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3816
Epoch 273/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3966
Epoch 274/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3710
Epoch 275/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3861
Epoch 276/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3868
Epoch 277/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3775
Epoch 278/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3730
Epoch 279/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3939
Epoch 280/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3877
Epoch 281/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3685
Epoch 282/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3719
Epoch 283/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3822
Epoch 284/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3792
Epoch 285/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4114
Epoch 286/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3899
Epoch 287/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3837
Epoch 288/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3809
Epoch 289/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3681
Epoch 290/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3832
Epoch 291/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3850
Epoch 292/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3616
Epoch 293/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3681
Epoch 294/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3939
Epoch 295/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4069
Epoch 296/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3745
Epoch 297/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3799
Epoch 298/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3926
Epoch 299/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3913
Epoch 300/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4206
```



```
Epoch 301/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3935
Epoch 302/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3838
Epoch 303/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3838
Epoch 304/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3745
Epoch 305/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3727
Epoch 306/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3802
Epoch 307/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3851
Epoch 308/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3881
Epoch 309/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3838
Epoch 310/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3642
Epoch 311/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3631
Epoch 312/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3655
Epoch 313/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3799
Epoch 314/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3749
Epoch 315/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3769
Epoch 316/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3716
Epoch 317/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3693
Epoch 318/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3670
Epoch 319/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3679
Epoch 320/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3740
Epoch 321/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3878
Epoch 322/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3817
Epoch 323/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3979
Epoch 324/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3993
Epoch 325/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3877
Epoch 326/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3778
Epoch 327/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3695
Epoch 328/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3908
Epoch 329/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3742
Epoch 330/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3594
```

```
Epoch 331/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3642
Epoch 332/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3679
Epoch 333/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4055
Epoch 334/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3881
Epoch 335/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3877
Epoch 336/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3981
Epoch 337/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4050
Epoch 338/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3775
Epoch 339/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3637
Epoch 340/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3823
Epoch 341/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3745
Epoch 342/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3654
Epoch 343/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3634
Epoch 344/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3599
Epoch 345/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3561
Epoch 346/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3582
Epoch 347/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3836
Epoch 348/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4178
Epoch 349/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3741
Epoch 350/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4031
Epoch 351/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3643
Epoch 352/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3846
Epoch 353/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3689
Epoch 354/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3623
Epoch 355/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3683
Epoch 356/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3571
Epoch 357/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3771
Epoch 358/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3953
Epoch 359/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3981
Epoch 360/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3941
```

```
Epoch 361/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4143
Epoch 362/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4634
Epoch 363/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4019
Epoch 364/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3655
Epoch 365/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3594
Epoch 366/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3588
Epoch 367/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3633
Epoch 368/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3827
Epoch 369/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3876
Epoch 370/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3684
Epoch 371/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3537
Epoch 372/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3545
Epoch 373/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3756
Epoch 374/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3489
Epoch 375/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3732
Epoch 376/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3731
Epoch 377/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3533
Epoch 378/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3716
Epoch 379/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3781
Epoch 380/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3756
Epoch 381/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4097
Epoch 382/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3698
Epoch 383/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3697
Epoch 384/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3575
Epoch 385/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3653
Epoch 386/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3500
Epoch 387/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3727
Epoch 388/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3688
Epoch 389/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3623
Epoch 390/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3501
```

```
Epoch 391/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3600
Epoch 392/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3710
Epoch 393/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3509
Epoch 394/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3577
Epoch 395/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3855
Epoch 396/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3755
Epoch 397/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3868
Epoch 398/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3769
Epoch 399/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3744
Epoch 400/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3731
Epoch 401/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3534
Epoch 402/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3549
Epoch 403/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3538
Epoch 404/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3543
Epoch 405/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3481
Epoch 406/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3521
Epoch 407/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3654
Epoch 408/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3611
Epoch 409/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3754
Epoch 410/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3831
Epoch 411/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3947
Epoch 412/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3782
Epoch 413/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3567
Epoch 414/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3493
Epoch 415/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3655
Epoch 416/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3715
Epoch 417/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3800
Epoch 418/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3595
Epoch 419/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3645
Epoch 420/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3459
```

```
Epoch 421/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3771
Epoch 422/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3864
Epoch 423/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3670
Epoch 424/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3657
Epoch 425/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3561
Epoch 426/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3561
Epoch 427/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3591
Epoch 428/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3676
Epoch 429/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3639
Epoch 430/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3589
Epoch 431/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3461
Epoch 432/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3510
Epoch 433/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3804
Epoch 434/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4005
Epoch 435/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4108
Epoch 436/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4013
Epoch 437/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3774
Epoch 438/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3774
Epoch 439/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3475
Epoch 440/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3416
Epoch 441/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3549
Epoch 442/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3731
Epoch 443/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3672
Epoch 444/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3618
Epoch 445/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3669
Epoch 446/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3519
Epoch 447/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3661
Epoch 448/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3542
Epoch 449/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3467
Epoch 450/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3482
```

```
Epoch 451/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3451
Epoch 452/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3597
Epoch 453/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3733
Epoch 454/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3677
Epoch 455/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3703
Epoch 456/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3528
Epoch 457/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3512
Epoch 458/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3817
Epoch 459/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3627
Epoch 460/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3571
Epoch 461/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3589
Epoch 462/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3433
Epoch 463/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3500
Epoch 464/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3614
Epoch 465/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3473
Epoch 466/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3747
Epoch 467/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3690
Epoch 468/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3981
Epoch 469/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4066
Epoch 470/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3436
Epoch 471/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3628
Epoch 472/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4099
Epoch 473/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3995
Epoch 474/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3886
Epoch 475/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3658
Epoch 476/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3538
Epoch 477/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3744
Epoch 478/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3579
Epoch 479/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3526
Epoch 480/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3594
```

```
Epoch 481/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3474
Epoch 482/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3687
Epoch 483/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3739
Epoch 484/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3699
Epoch 485/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3776
Epoch 486/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3548
Epoch 487/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3393
Epoch 488/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3492
Epoch 489/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3317
Epoch 490/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3460
Epoch 491/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3627
Epoch 492/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3672
Epoch 493/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3456
Epoch 494/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3498
Epoch 495/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3457
Epoch 496/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3686
Epoch 497/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3949
Epoch 498/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3449
Epoch 499/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3365
Epoch 500/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3615
Epoch 501/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3509
Epoch 502/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3588
Epoch 503/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3876
Epoch 504/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3654
Epoch 505/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3555
Epoch 506/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3678
Epoch 507/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3528
Epoch 508/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3340
Epoch 509/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3427
Epoch 510/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3384
```

```
Epoch 511/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3432
Epoch 512/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3536
Epoch 513/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3428
Epoch 514/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3378
Epoch 515/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3484
Epoch 516/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3502
Epoch 517/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3600
Epoch 518/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3590
Epoch 519/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3625
Epoch 520/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3601
Epoch 521/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3403
Epoch 522/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3562
Epoch 523/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3655
Epoch 524/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3307
Epoch 525/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3448
Epoch 526/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3502
Epoch 527/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3360
Epoch 528/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3430
Epoch 529/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3759
Epoch 530/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3652
Epoch 531/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3647
Epoch 532/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3389
Epoch 533/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3320
Epoch 534/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3564
Epoch 535/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3617
Epoch 536/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3379
Epoch 537/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3964
Epoch 538/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3498
Epoch 539/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3544
Epoch 540/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3854
```



```
Epoch 541/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3990
Epoch 542/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3595
Epoch 543/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3615
Epoch 544/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3552
Epoch 545/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3462
Epoch 546/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3553
Epoch 547/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3694
Epoch 548/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3573
Epoch 549/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3357
Epoch 550/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3357
Epoch 551/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3393
Epoch 552/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3431
Epoch 553/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3305
Epoch 554/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3447
Epoch 555/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3812
Epoch 556/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3829
Epoch 557/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3613
Epoch 558/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3450
Epoch 559/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3743
Epoch 560/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3441
Epoch 561/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3357
Epoch 562/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3461
Epoch 563/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3449
Epoch 564/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3530
Epoch 565/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3395
Epoch 566/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3577
Epoch 567/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3394
Epoch 568/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3480
Epoch 569/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3398
Epoch 570/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3329
```

```
Epoch 571/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3607
Epoch 572/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3499
Epoch 573/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3513
Epoch 574/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3691
Epoch 575/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3408
Epoch 576/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3322
Epoch 577/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3525
Epoch 578/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4067
Epoch 579/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3471
Epoch 580/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3339
Epoch 581/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3618
Epoch 582/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3503
Epoch 583/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3464
Epoch 584/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3741
Epoch 585/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3899
Epoch 586/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3575
Epoch 587/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3445
Epoch 588/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3298
Epoch 589/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3253
Epoch 590/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3251
Epoch 591/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3419
Epoch 592/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3410
Epoch 593/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3353
Epoch 594/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3353
Epoch 595/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4102
Epoch 596/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3904
Epoch 597/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3452
Epoch 598/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3384
Epoch 599/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3304
Epoch 600/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3471
```

```
Epoch 601/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3580
Epoch 602/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3601
Epoch 603/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3513
Epoch 604/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3441
Epoch 605/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3453
Epoch 606/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3640
Epoch 607/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3725
Epoch 608/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3587
Epoch 609/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3462
Epoch 610/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3576
Epoch 611/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3411
Epoch 612/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3597
Epoch 613/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3568
Epoch 614/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3429
Epoch 615/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3551
Epoch 616/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3411
Epoch 617/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3215
Epoch 618/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3689
Epoch 619/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3897
Epoch 620/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3726
Epoch 621/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3381
Epoch 622/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3410
Epoch 623/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3374
Epoch 624/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3252
Epoch 625/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3231
Epoch 626/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3316
Epoch 627/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3463
Epoch 628/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3595
Epoch 629/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3700
Epoch 630/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3697
```

```
Epoch 631/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3639
Epoch 632/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3579
Epoch 633/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3513
Epoch 634/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3428
Epoch 635/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3458
Epoch 636/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3595
Epoch 637/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3526
Epoch 638/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3483
Epoch 639/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3327
Epoch 640/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3361
Epoch 641/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3260
Epoch 642/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3494
Epoch 643/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3665
Epoch 644/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3735
Epoch 645/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3701
Epoch 646/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3868
Epoch 647/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3524
Epoch 648/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3517
Epoch 649/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3426
Epoch 650/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3360
Epoch 651/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3295
Epoch 652/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3239
Epoch 653/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3393
Epoch 654/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3553
Epoch 655/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3346
Epoch 656/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3248
Epoch 657/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3361
Epoch 658/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3354
Epoch 659/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3400
Epoch 660/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3628
```

```
Epoch 661/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3274
Epoch 662/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3374
Epoch 663/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3712
Epoch 664/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3480
Epoch 665/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3492
Epoch 666/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3461
Epoch 667/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3270
Epoch 668/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3198
Epoch 669/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3428
Epoch 670/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3335
Epoch 671/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3401
Epoch 672/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3735
Epoch 673/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3938
Epoch 674/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3981
Epoch 675/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3386
Epoch 676/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3294
Epoch 677/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3270
Epoch 678/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3232
Epoch 679/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3356
Epoch 680/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3367
Epoch 681/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3637
Epoch 682/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3303
Epoch 683/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3336
Epoch 684/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3371
Epoch 685/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3364
Epoch 686/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3323
Epoch 687/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3438
Epoch 688/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3445
Epoch 689/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4183
Epoch 690/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3757
```

```
Epoch 691/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3401
Epoch 692/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3466
Epoch 693/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3361
Epoch 694/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3390
Epoch 695/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3315
Epoch 696/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3311
Epoch 697/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3287
Epoch 698/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3395
Epoch 699/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3331
Epoch 700/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3407
Epoch 701/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3388
Epoch 702/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3174
Epoch 703/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3187
Epoch 704/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3485
Epoch 705/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3398
Epoch 706/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3433
Epoch 707/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3417
Epoch 708/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3571
Epoch 709/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3606
Epoch 710/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3531
Epoch 711/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3311
Epoch 712/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3742
Epoch 713/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3454
Epoch 714/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3461
Epoch 715/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3206
Epoch 716/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3231
Epoch 717/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3451
Epoch 718/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3669
Epoch 719/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4235
Epoch 720/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3928
```

```
Epoch 721/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3646
Epoch 722/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3404
Epoch 723/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3538
Epoch 724/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3333
Epoch 725/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3492
Epoch 726/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3588
Epoch 727/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3496
Epoch 728/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3516
Epoch 729/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3394
Epoch 730/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3392
Epoch 731/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3399
Epoch 732/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3415
Epoch 733/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3339
Epoch 734/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3367
Epoch 735/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3436
Epoch 736/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3322
Epoch 737/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3335
Epoch 738/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3530
Epoch 739/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3499
Epoch 740/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3386
Epoch 741/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3397
Epoch 742/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3621
Epoch 743/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3312
Epoch 744/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3292
Epoch 745/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3210
Epoch 746/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3248
Epoch 747/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3231
Epoch 748/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3430
Epoch 749/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3720
Epoch 750/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3456
```

```
Epoch 751/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3544
Epoch 752/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4044
Epoch 753/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3974
Epoch 754/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3542
Epoch 755/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3479
Epoch 756/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3498
Epoch 757/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3621
Epoch 758/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3707
Epoch 759/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3278
Epoch 760/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3362
Epoch 761/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3492
Epoch 762/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3376
Epoch 763/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3238
Epoch 764/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3465
Epoch 765/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3358
Epoch 766/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3374
Epoch 767/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3320
Epoch 768/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3528
Epoch 769/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3371
Epoch 770/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3223
Epoch 771/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3377
Epoch 772/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3361
Epoch 773/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3662
Epoch 774/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3708
Epoch 775/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3340
Epoch 776/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3691
Epoch 777/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3635
Epoch 778/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3200
Epoch 779/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3227
Epoch 780/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3362
```



```
Epoch 781/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3363
Epoch 782/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3235
Epoch 783/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3252
Epoch 784/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3210
Epoch 785/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3210
Epoch 786/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3327
Epoch 787/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3327
Epoch 788/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3236
Epoch 789/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3305
Epoch 790/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3339
Epoch 791/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3732
Epoch 792/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3694
Epoch 793/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3489
Epoch 794/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3554
Epoch 795/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3541
Epoch 796/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3718
Epoch 797/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3254
Epoch 798/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3608
Epoch 799/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3568
Epoch 800/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3358
Epoch 801/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3297
Epoch 802/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3250
Epoch 803/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3174
Epoch 804/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3220
Epoch 805/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3460
Epoch 806/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3439
Epoch 807/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3359
Epoch 808/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3464
Epoch 809/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3664
Epoch 810/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3380
```

```
Epoch 811/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3247
Epoch 812/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3163
Epoch 813/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3238
Epoch 814/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3306
Epoch 815/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3343
Epoch 816/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3327
Epoch 817/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3632
Epoch 818/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3419
Epoch 819/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3182
Epoch 820/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3844
Epoch 821/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3506
Epoch 822/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3416
Epoch 823/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3534
Epoch 824/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3520
Epoch 825/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3329
Epoch 826/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3220
Epoch 827/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3167
Epoch 828/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3353
Epoch 829/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3663
Epoch 830/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4161
Epoch 831/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3396
Epoch 832/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3465
Epoch 833/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3393
Epoch 834/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3442
Epoch 835/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3135
Epoch 836/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3243
Epoch 837/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3253
Epoch 838/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3404
Epoch 839/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3281
Epoch 840/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3898
```

```
Epoch 841/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3497
Epoch 842/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3571
Epoch 843/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3363
Epoch 844/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3201
Epoch 845/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3221
Epoch 846/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3202
Epoch 847/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3356
Epoch 848/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3378
Epoch 849/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3168
Epoch 850/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3349
Epoch 851/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3280
Epoch 852/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3415
Epoch 853/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3582
Epoch 854/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3261
Epoch 855/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3331
Epoch 856/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3351
Epoch 857/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3332
Epoch 858/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3535
Epoch 859/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3616
Epoch 860/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3331
Epoch 861/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3591
Epoch 862/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3223
Epoch 863/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3127
Epoch 864/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3642
Epoch 865/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3848
Epoch 866/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3680
Epoch 867/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3264
Epoch 868/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3268
Epoch 869/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3324
Epoch 870/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3526
```

```
Epoch 871/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3590
Epoch 872/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3524
Epoch 873/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3282
Epoch 874/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3263
Epoch 875/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3316
Epoch 876/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3341
Epoch 877/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3430
Epoch 878/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3590
Epoch 879/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3392
Epoch 880/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3197
Epoch 881/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3502
Epoch 882/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3830
Epoch 883/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4225
Epoch 884/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3379
Epoch 885/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3388
Epoch 886/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3340
Epoch 887/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3263
Epoch 888/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3321
Epoch 889/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3238
Epoch 890/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3578
Epoch 891/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3227
Epoch 892/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3233
Epoch 893/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3369
Epoch 894/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3417
Epoch 895/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3884
Epoch 896/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3479
Epoch 897/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3321
Epoch 898/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3469
Epoch 899/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3804
Epoch 900/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3646
```

```
Epoch 901/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3635
Epoch 902/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3488
Epoch 903/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3649
Epoch 904/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3286
Epoch 905/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3310
Epoch 906/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3458
Epoch 907/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3430
Epoch 908/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3636
Epoch 909/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4075
Epoch 910/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3669
Epoch 911/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3199
Epoch 912/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3220
Epoch 913/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3173
Epoch 914/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3472
Epoch 915/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3413
Epoch 916/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3470
Epoch 917/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3351
Epoch 918/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3372
Epoch 919/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3550
Epoch 920/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3601
Epoch 921/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3401
Epoch 922/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3503
Epoch 923/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3154
Epoch 924/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3454
Epoch 925/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3297
Epoch 926/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3185
Epoch 927/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3303
Epoch 928/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3212
Epoch 929/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3349
Epoch 930/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3887
```

```
Epoch 931/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4266
Epoch 932/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3749
Epoch 933/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3379
Epoch 934/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3806
Epoch 935/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3350
Epoch 936/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3280
Epoch 937/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3358
Epoch 938/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3464
Epoch 939/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3511
Epoch 940/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3372
Epoch 941/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3104
Epoch 942/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3137
Epoch 943/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3349
Epoch 944/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3375
Epoch 945/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3501
Epoch 946/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3119
Epoch 947/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3227
Epoch 948/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3228
Epoch 949/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3180
Epoch 950/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3108
Epoch 951/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3020
Epoch 952/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3342
Epoch 953/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3397
Epoch 954/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3522
Epoch 955/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3169
Epoch 956/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3383
Epoch 957/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3215
Epoch 958/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3246
Epoch 959/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3090
Epoch 960/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3130
```

```
Epoch 961/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3183
Epoch 962/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3097
Epoch 963/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3376
Epoch 964/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3134
Epoch 965/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3117
Epoch 966/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3259
Epoch 967/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3197
Epoch 968/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3310
Epoch 969/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3781
Epoch 970/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3797
Epoch 971/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3519
Epoch 972/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3515
Epoch 973/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3625
Epoch 974/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3447
Epoch 975/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3521
Epoch 976/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3382
Epoch 977/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3358
Epoch 978/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3162
Epoch 979/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3145
Epoch 980/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3347
Epoch 981/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3158
Epoch 982/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3164
Epoch 983/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3102
Epoch 984/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3227
Epoch 985/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3400
Epoch 986/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3402
Epoch 987/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3355
Epoch 988/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3125
Epoch 989/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3267
Epoch 990/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3325
```

```

Epoch 991/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3344
Epoch 992/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3419
Epoch 993/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3255
Epoch 994/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3221
Epoch 995/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3493
Epoch 996/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3542
Epoch 997/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3713
Epoch 998/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3214
Epoch 999/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3416
Epoch 1000/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3496

```

Out[]: <keras.src.callbacks.History at 0x1a6c0e25ed0>

```

In [ ]: # BEGIN UNIT TEST
        model_r.summary()

        model_r_test(model_r, classes, X_train.shape[1])
        # END UNIT TEST

```

Model: "sequential"

Layer (type)	Output Shape	Param #
dense_8 (Dense)	(None, 120)	360
dense_9 (Dense)	(None, 40)	4840
dense_10 (Dense)	(None, 6)	246

=====
 Total params: 5446 (42.55 KB)
 Trainable params: 5446 (42.55 KB)
 Non-trainable params: 0 (0.00 Byte)

ddd

All tests passed!

► **Click for hints**

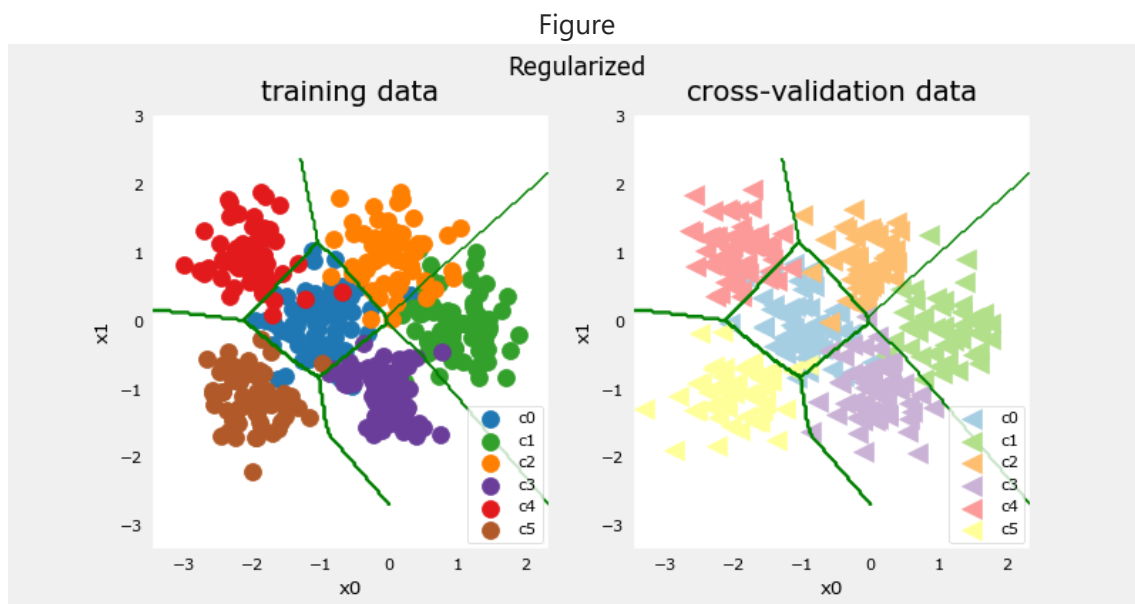
```

In [ ]: #make a model for plotting routines to call
        model_predict_r = lambda X1: np.argmax(tf.nn.softmax(model_r.predict(X1)).numpy(

        plt_nn(model_predict_r, X_train,y_train, classes, X_cv, y_cv, subtitle="Regulari

1082/1082 [=====] - 1s 790us/step
1082/1082 [=====] - 1s 809us/step

```

The results look very similar to the 'ideal' model. Let's check classification error.

```
In [ ]: training_cerr_reg = eval_cat_err(y_train, model_predict_r(X_train))
cv_cerr_reg = eval_cat_err(y_cv, model_predict_r(X_cv))
test_cerr_reg = eval_cat_err(y_test, model_predict_r(X_test))
print(f"categorization error, training, regularized: {training_cerr_reg:0.3f}, s
print(f"categorization error, cv,          regularized: {cv_cerr_reg:0.3f}, simple
```

```
13/13 [=====] - 0s 945us/step
```

```
10/10 [=====] - 0s 1ms/step
```

```
3/3 [=====] - 0s 2ms/step
```

```
categorization error, training, regularized: 0.060, simple model, 0.065, complex
model: 0.007
```

```
categorization error, cv,          regularized: 0.072, simple model, 0.059, complex
model: 0.109
```

The simple model is a bit better in the training set than the regularized model but worse in the cross validation set.

7 - Iterate to find optimal regularization value

As you did in linear regression, you can try many regularization values. This code takes several minutes to run. If you have time, you can run it and check the results. If not, you have completed the graded parts of the assignment!

```
In [ ]: tf.random.set_seed(1234)
lambdas = [0.0, 0.001, 0.01, 0.05, 0.1, 0.2, 0.3]
models=[None] * len(lambdas)

for i in range(len(lambdas)):
    lambda_ = lambdas[i]
    models[i] = Sequential(
        [
            Dense(120, activation = 'relu', kernel_regularizer=tf.keras.regulariz
            Dense(40, activation = 'relu', kernel_regularizer=tf.keras.regulariz
            Dense(classes, activation = 'linear')
```

```
    ]  
)  
models[i].compile(  
    loss=tf.keras.losses.SparseCategoricalCrossentropy(from_logits=True),  
    optimizer=tf.keras.optimizers.Adam(0.01),  
)  
  
models[i].fit(  
    X_train,y_train,  
    epochs=1000  
)  
print(f"Finished lambda = {lambda_}")
```

```
Epoch 1/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0039
Epoch 2/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3761
Epoch 3/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3170
Epoch 4/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2785
Epoch 5/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2577
Epoch 6/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2761
Epoch 7/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2361
Epoch 8/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2249
Epoch 9/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2285
Epoch 10/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1960
Epoch 11/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2111
Epoch 12/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2060
Epoch 13/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2317
Epoch 14/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2148
Epoch 15/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2161
Epoch 16/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1987
Epoch 17/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2007
Epoch 18/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2071
Epoch 19/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2120
Epoch 20/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2008
Epoch 21/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2191
Epoch 22/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2486
Epoch 23/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2121
Epoch 24/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1952
Epoch 25/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2056
Epoch 26/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1910
Epoch 27/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1938
Epoch 28/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1972
Epoch 29/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2155
Epoch 30/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2527
```

```
Epoch 31/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2071
Epoch 32/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1934
Epoch 33/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1872
Epoch 34/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2111
Epoch 35/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1910
Epoch 36/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 37/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1817
Epoch 38/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 39/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1957
Epoch 40/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1915
Epoch 41/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2064
Epoch 42/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1971
Epoch 43/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1869
Epoch 44/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2096
Epoch 45/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2375
Epoch 46/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1768
Epoch 47/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1829
Epoch 48/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1781
Epoch 49/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1699
Epoch 50/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1710
Epoch 51/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1905
Epoch 52/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1868
Epoch 53/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1961
Epoch 54/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1704
Epoch 55/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1935
Epoch 56/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1863
Epoch 57/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2008
Epoch 58/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1879
Epoch 59/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1784
Epoch 60/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1833
```

```
Epoch 61/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1913
Epoch 62/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1663
Epoch 63/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1628
Epoch 64/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1932
Epoch 65/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2000
Epoch 66/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1792
Epoch 67/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1913
Epoch 68/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2109
Epoch 69/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1973
Epoch 70/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1647
Epoch 71/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1923
Epoch 72/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1855
Epoch 73/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1734
Epoch 74/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1700
Epoch 75/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1575
Epoch 76/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1533
Epoch 77/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1584
Epoch 78/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1503
Epoch 79/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1618
Epoch 80/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1693
Epoch 81/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1812
Epoch 82/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 83/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1727
Epoch 84/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1699
Epoch 85/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1669
Epoch 86/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1650
Epoch 87/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1619
Epoch 88/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1731
Epoch 89/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1615
Epoch 90/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1537
```

```
Epoch 91/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1465
Epoch 92/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1476
Epoch 93/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1427
Epoch 94/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1442
Epoch 95/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1537
Epoch 96/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1656
Epoch 97/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1681
Epoch 98/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1678
Epoch 99/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1656
Epoch 100/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1516
Epoch 101/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1575
Epoch 102/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1507
Epoch 103/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1792
Epoch 104/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1571
Epoch 105/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1381
Epoch 106/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1362
Epoch 107/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1461
Epoch 108/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1419
Epoch 109/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1518
Epoch 110/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1321
Epoch 111/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1466
Epoch 112/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1460
Epoch 113/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1571
Epoch 114/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1510
Epoch 115/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1358
Epoch 116/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1388
Epoch 117/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1310
Epoch 118/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1324
Epoch 119/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1509
Epoch 120/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1380
```

```
Epoch 121/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1496
Epoch 122/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1641
Epoch 123/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1575
Epoch 124/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1375
Epoch 125/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1385
Epoch 126/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1513
Epoch 127/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1324
Epoch 128/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1267
Epoch 129/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1315
Epoch 130/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1259
Epoch 131/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1213
Epoch 132/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1346
Epoch 133/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1338
Epoch 134/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1260
Epoch 135/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1403
Epoch 136/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1304
Epoch 137/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1293
Epoch 138/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1478
Epoch 139/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1503
Epoch 140/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1526
Epoch 141/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1214
Epoch 142/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1264
Epoch 143/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1181
Epoch 144/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1221
Epoch 145/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1390
Epoch 146/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1227
Epoch 147/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1296
Epoch 148/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1217
Epoch 149/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1296
Epoch 150/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1311
```

```
Epoch 151/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1191
Epoch 152/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1193
Epoch 153/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1437
Epoch 154/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1284
Epoch 155/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1131
Epoch 156/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1127
Epoch 157/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1392
Epoch 158/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1339
Epoch 159/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1079
Epoch 160/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1265
Epoch 161/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1113
Epoch 162/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1372
Epoch 163/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1192
Epoch 164/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1120
Epoch 165/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1259
Epoch 166/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1113
Epoch 167/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1311
Epoch 168/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1696
Epoch 169/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1333
Epoch 170/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1652
Epoch 171/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1319
Epoch 172/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1151
Epoch 173/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1223
Epoch 174/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1460
Epoch 175/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1193
Epoch 176/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1288
Epoch 177/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1122
Epoch 178/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1210
Epoch 179/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1482
Epoch 180/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1247
```



```
Epoch 181/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1236
Epoch 182/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1100
Epoch 183/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1056
Epoch 184/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1028
Epoch 185/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0995
Epoch 186/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1026
Epoch 187/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1051
Epoch 188/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1125
Epoch 189/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1003
Epoch 190/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0901
Epoch 191/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0953
Epoch 192/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1040
Epoch 193/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1039
Epoch 194/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0951
Epoch 195/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1094
Epoch 196/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1138
Epoch 197/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0982
Epoch 198/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1007
Epoch 199/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1049
Epoch 200/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1145
Epoch 201/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1029
Epoch 202/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1026
Epoch 203/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1082
Epoch 204/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1819
Epoch 205/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1278
Epoch 206/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1137
Epoch 207/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1059
Epoch 208/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1111
Epoch 209/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1072
Epoch 210/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0986
```

```
Epoch 211/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0977
Epoch 212/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0983
Epoch 213/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1113
Epoch 214/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1095
Epoch 215/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0852
Epoch 216/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0876
Epoch 217/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0916
Epoch 218/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1001
Epoch 219/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1487
Epoch 220/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1195
Epoch 221/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1040
Epoch 222/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1097
Epoch 223/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1005
Epoch 224/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0865
Epoch 225/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0774
Epoch 226/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0816
Epoch 227/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0842
Epoch 228/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0831
Epoch 229/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0804
Epoch 230/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0888
Epoch 231/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1025
Epoch 232/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0949
Epoch 233/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1009
Epoch 234/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0956
Epoch 235/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1032
Epoch 236/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0874
Epoch 237/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0817
Epoch 238/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0942
Epoch 239/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1015
Epoch 240/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0998
```

```
Epoch 241/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1045
Epoch 242/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1221
Epoch 243/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1091
Epoch 244/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0939
Epoch 245/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0985
Epoch 246/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1004
Epoch 247/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0927
Epoch 248/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0759
Epoch 249/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0779
Epoch 250/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0802
Epoch 251/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0754
Epoch 252/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0745
Epoch 253/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1026
Epoch 254/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0730
Epoch 255/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0841
Epoch 256/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0689
Epoch 257/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0746
Epoch 258/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0805
Epoch 259/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0669
Epoch 260/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0812
Epoch 261/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0905
Epoch 262/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0904
Epoch 263/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1039
Epoch 264/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1894
Epoch 265/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2551
Epoch 266/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1532
Epoch 267/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1093
Epoch 268/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0970
Epoch 269/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0950
Epoch 270/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0847
```

```
Epoch 271/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0884
Epoch 272/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0984
Epoch 273/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0914
Epoch 274/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0895
Epoch 275/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0838
Epoch 276/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0764
Epoch 277/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0755
Epoch 278/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0703
Epoch 279/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0755
Epoch 280/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0668
Epoch 281/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0602
Epoch 282/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0654
Epoch 283/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0600
Epoch 284/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0598
Epoch 285/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0665
Epoch 286/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0904
Epoch 287/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0950
Epoch 288/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0818
Epoch 289/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0923
Epoch 290/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0732
Epoch 291/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0726
Epoch 292/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0732
Epoch 293/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0650
Epoch 294/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0782
Epoch 295/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0836
Epoch 296/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1034
Epoch 297/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0972
Epoch 298/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0786
Epoch 299/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0666
Epoch 300/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0657
```

```
Epoch 301/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0575
Epoch 302/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0628
Epoch 303/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0669
Epoch 304/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0631
Epoch 305/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0856
Epoch 306/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0630
Epoch 307/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0755
Epoch 308/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0596
Epoch 309/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0677
Epoch 310/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0800
Epoch 311/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0750
Epoch 312/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0617
Epoch 313/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0757
Epoch 314/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0781
Epoch 315/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1007
Epoch 316/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0598
Epoch 317/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0708
Epoch 318/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0700
Epoch 319/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0676
Epoch 320/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0760
Epoch 321/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0662
Epoch 322/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0884
Epoch 323/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0745
Epoch 324/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0623
Epoch 325/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0604
Epoch 326/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0561
Epoch 327/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0637
Epoch 328/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0670
Epoch 329/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0603
Epoch 330/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0562
```

```
Epoch 331/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0593
Epoch 332/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0573
Epoch 333/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0599
Epoch 334/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0647
Epoch 335/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0738
Epoch 336/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0720
Epoch 337/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0645
Epoch 338/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0584
Epoch 339/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0565
Epoch 340/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0546
Epoch 341/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0582
Epoch 342/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0901
Epoch 343/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0595
Epoch 344/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0693
Epoch 345/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0988
Epoch 346/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0768
Epoch 347/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0728
Epoch 348/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1016
Epoch 349/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1204
Epoch 350/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0840
Epoch 351/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0716
Epoch 352/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0872
Epoch 353/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0999
Epoch 354/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0749
Epoch 355/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0663
Epoch 356/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0630
Epoch 357/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0575
Epoch 358/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0719
Epoch 359/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0606
Epoch 360/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0700
```

```
Epoch 361/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0832
Epoch 362/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1069
Epoch 363/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0911
Epoch 364/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1207
Epoch 365/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 366/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1374
Epoch 367/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1254
Epoch 368/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0970
Epoch 369/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0592
Epoch 370/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0694
Epoch 371/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0648
Epoch 372/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1214
Epoch 373/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1084
Epoch 374/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1095
Epoch 375/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0949
Epoch 376/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0712
Epoch 377/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0802
Epoch 378/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1145
Epoch 379/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0712
Epoch 380/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0588
Epoch 381/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0619
Epoch 382/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0696
Epoch 383/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0571
Epoch 384/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0579
Epoch 385/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0662
Epoch 386/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0501
Epoch 387/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0595
Epoch 388/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0548
Epoch 389/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0816
Epoch 390/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0807
```

```
Epoch 391/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0710
Epoch 392/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0512
Epoch 393/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0593
Epoch 394/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0489
Epoch 395/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0525
Epoch 396/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0477
Epoch 397/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0429
Epoch 398/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0451
Epoch 399/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0450
Epoch 400/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0529
Epoch 401/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0759
Epoch 402/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0709
Epoch 403/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0555
Epoch 404/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0482
Epoch 405/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0470
Epoch 406/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0438
Epoch 407/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0481
Epoch 408/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0610
Epoch 409/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0585
Epoch 410/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0551
Epoch 411/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0461
Epoch 412/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0467
Epoch 413/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0418
Epoch 414/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0374
Epoch 415/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0372
Epoch 416/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0384
Epoch 417/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0366
Epoch 418/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0384
Epoch 419/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0393
Epoch 420/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0418
```



```
Epoch 421/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0510
Epoch 422/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0450
Epoch 423/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0456
Epoch 424/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0387
Epoch 425/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0418
Epoch 426/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0383
Epoch 427/1000
13/13 [=====] - 0s 3ms/step - loss: 0.0334
Epoch 428/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0438
Epoch 429/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0482
Epoch 430/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0438
Epoch 431/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0485
Epoch 432/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0463
Epoch 433/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0597
Epoch 434/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0574
Epoch 435/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0767
Epoch 436/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0569
Epoch 437/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0699
Epoch 438/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0568
Epoch 439/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0575
Epoch 440/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0728
Epoch 441/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0848
Epoch 442/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0531
Epoch 443/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0434
Epoch 444/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0390
Epoch 445/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0340
Epoch 446/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0404
Epoch 447/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0447
Epoch 448/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0415
Epoch 449/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0448
Epoch 450/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0437
```

```
Epoch 451/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0347
Epoch 452/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0368
Epoch 453/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0445
Epoch 454/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0542
Epoch 455/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0482
Epoch 456/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0378
Epoch 457/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0443
Epoch 458/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0447
Epoch 459/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0677
Epoch 460/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1071
Epoch 461/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1123
Epoch 462/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2113
Epoch 463/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1245
Epoch 464/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1274
Epoch 465/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1186
Epoch 466/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0752
Epoch 467/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0691
Epoch 468/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0894
Epoch 469/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0924
Epoch 470/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1244
Epoch 471/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1068
Epoch 472/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0913
Epoch 473/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0873
Epoch 474/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0517
Epoch 475/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0506
Epoch 476/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0441
Epoch 477/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0462
Epoch 478/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0436
Epoch 479/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0358
Epoch 480/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0374
```

```
Epoch 481/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0409
Epoch 482/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0391
Epoch 483/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0446
Epoch 484/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0546
Epoch 485/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0503
Epoch 486/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0533
Epoch 487/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0447
Epoch 488/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0409
Epoch 489/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0426
Epoch 490/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0438
Epoch 491/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0401
Epoch 492/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0389
Epoch 493/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0697
Epoch 494/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0612
Epoch 495/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0489
Epoch 496/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0773
Epoch 497/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0799
Epoch 498/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0701
Epoch 499/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0504
Epoch 500/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0572
Epoch 501/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1019
Epoch 502/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0667
Epoch 503/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0694
Epoch 504/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0502
Epoch 505/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0521
Epoch 506/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0377
Epoch 507/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0438
Epoch 508/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0370
Epoch 509/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0380
Epoch 510/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0386
```

```
Epoch 511/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0383
Epoch 512/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0365
Epoch 513/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0393
Epoch 514/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0393
Epoch 515/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0376
Epoch 516/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0385
Epoch 517/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0360
Epoch 518/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0404
Epoch 519/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0533
Epoch 520/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0651
Epoch 521/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0437
Epoch 522/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0553
Epoch 523/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0437
Epoch 524/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0431
Epoch 525/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0419
Epoch 526/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0398
Epoch 527/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0410
Epoch 528/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0374
Epoch 529/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0369
Epoch 530/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0328
Epoch 531/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0330
Epoch 532/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0371
Epoch 533/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0346
Epoch 534/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0438
Epoch 535/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0662
Epoch 536/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0718
Epoch 537/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0813
Epoch 538/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0774
Epoch 539/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0436
Epoch 540/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0447
```

```
Epoch 541/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0387
Epoch 542/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0528
Epoch 543/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0446
Epoch 544/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0447
Epoch 545/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0487
Epoch 546/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0584
Epoch 547/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0576
Epoch 548/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0433
Epoch 549/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0560
Epoch 550/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0437
Epoch 551/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0564
Epoch 552/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0418
Epoch 553/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0450
Epoch 554/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0494
Epoch 555/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0403
Epoch 556/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0469
Epoch 557/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0576
Epoch 558/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0414
Epoch 559/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0364
Epoch 560/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0346
Epoch 561/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0301
Epoch 562/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0315
Epoch 563/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0319
Epoch 564/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0319
Epoch 565/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0352
Epoch 566/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0351
Epoch 567/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0368
Epoch 568/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0331
Epoch 569/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0309
Epoch 570/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0320
```

```
Epoch 571/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0373
Epoch 572/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0407
Epoch 573/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0329
Epoch 574/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0316
Epoch 575/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0328
Epoch 576/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0287
Epoch 577/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0295
Epoch 578/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0333
Epoch 579/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0295
Epoch 580/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0304
Epoch 581/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0302
Epoch 582/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0277
Epoch 583/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0292
Epoch 584/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0272
Epoch 585/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0281
Epoch 586/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0326
Epoch 587/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0312
Epoch 588/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0282
Epoch 589/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0547
Epoch 590/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1873
Epoch 591/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1398
Epoch 592/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1978
Epoch 593/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0855
Epoch 594/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0839
Epoch 595/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0964
Epoch 596/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1144
Epoch 597/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1494
Epoch 598/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1288
Epoch 599/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0751
Epoch 600/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0775
```

```
Epoch 601/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0582
Epoch 602/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0480
Epoch 603/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0694
Epoch 604/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0589
Epoch 605/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0554
Epoch 606/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0481
Epoch 607/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0356
Epoch 608/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0451
Epoch 609/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0355
Epoch 610/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0372
Epoch 611/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0378
Epoch 612/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0354
Epoch 613/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0383
Epoch 614/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0326
Epoch 615/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0374
Epoch 616/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0320
Epoch 617/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0327
Epoch 618/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0427
Epoch 619/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0346
Epoch 620/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0372
Epoch 621/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0524
Epoch 622/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0781
Epoch 623/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0758
Epoch 624/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0419
Epoch 625/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0404
Epoch 626/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0338
Epoch 627/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0321
Epoch 628/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0330
Epoch 629/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0295
Epoch 630/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0291
```

```
Epoch 631/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0281
Epoch 632/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0285
Epoch 633/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0312
Epoch 634/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0270
Epoch 635/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0280
Epoch 636/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0284
Epoch 637/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0277
Epoch 638/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0286
Epoch 639/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0279
Epoch 640/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0285
Epoch 641/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0308
Epoch 642/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0318
Epoch 643/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0299
Epoch 644/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0315
Epoch 645/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0337
Epoch 646/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0336
Epoch 647/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0303
Epoch 648/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0381
Epoch 649/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0366
Epoch 650/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0351
Epoch 651/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0378
Epoch 652/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0325
Epoch 653/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0285
Epoch 654/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0292
Epoch 655/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0273
Epoch 656/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0266
Epoch 657/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0342
Epoch 658/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0367
Epoch 659/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0444
Epoch 660/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0399
```



```
Epoch 661/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0381
Epoch 662/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0443
Epoch 663/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0331
Epoch 664/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0318
Epoch 665/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0330
Epoch 666/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0313
Epoch 667/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0313
Epoch 668/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0483
Epoch 669/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0562
Epoch 670/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0969
Epoch 671/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0803
Epoch 672/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1076
Epoch 673/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2383
Epoch 674/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1501
Epoch 675/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2156
Epoch 676/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1251
Epoch 677/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1278
Epoch 678/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1009
Epoch 679/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0837
Epoch 680/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0657
Epoch 681/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0666
Epoch 682/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0559
Epoch 683/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0615
Epoch 684/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0510
Epoch 685/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0586
Epoch 686/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0682
Epoch 687/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0532
Epoch 688/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1128
Epoch 689/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1216
Epoch 690/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0671
```

```
Epoch 691/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0554
Epoch 692/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0510
Epoch 693/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0484
Epoch 694/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0480
Epoch 695/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0525
Epoch 696/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0420
Epoch 697/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0443
Epoch 698/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0437
Epoch 699/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0429
Epoch 700/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0405
Epoch 701/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0392
Epoch 702/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0423
Epoch 703/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0370
Epoch 704/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0362
Epoch 705/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0368
Epoch 706/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0381
Epoch 707/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0401
Epoch 708/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0352
Epoch 709/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0384
Epoch 710/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0384
Epoch 711/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0423
Epoch 712/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0377
Epoch 713/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0491
Epoch 714/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0636
Epoch 715/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0651
Epoch 716/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0571
Epoch 717/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0582
Epoch 718/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0556
Epoch 719/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0637
Epoch 720/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0475
```

```
Epoch 721/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0701
Epoch 722/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0493
Epoch 723/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0487
Epoch 724/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0438
Epoch 725/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0342
Epoch 726/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0315
Epoch 727/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0329
Epoch 728/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0326
Epoch 729/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0305
Epoch 730/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0541
Epoch 731/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0760
Epoch 732/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0549
Epoch 733/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0322
Epoch 734/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0362
Epoch 735/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0377
Epoch 736/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0358
Epoch 737/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0329
Epoch 738/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0361
Epoch 739/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0394
Epoch 740/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0305
Epoch 741/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0319
Epoch 742/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0296
Epoch 743/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0292
Epoch 744/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0274
Epoch 745/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0273
Epoch 746/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0291
Epoch 747/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0259
Epoch 748/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0293
Epoch 749/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0285
Epoch 750/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0314
```

```
Epoch 751/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0276
Epoch 752/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0276
Epoch 753/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0303
Epoch 754/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0274
Epoch 755/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0273
Epoch 756/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0344
Epoch 757/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0369
Epoch 758/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0348
Epoch 759/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0442
Epoch 760/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0370
Epoch 761/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0308
Epoch 762/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0302
Epoch 763/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0331
Epoch 764/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0313
Epoch 765/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0334
Epoch 766/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0327
Epoch 767/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0320
Epoch 768/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0283
Epoch 769/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0282
Epoch 770/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0280
Epoch 771/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0271
Epoch 772/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0268
Epoch 773/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0267
Epoch 774/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0275
Epoch 775/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0264
Epoch 776/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0295
Epoch 777/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0316
Epoch 778/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0342
Epoch 779/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0398
Epoch 780/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0360
```

```
Epoch 781/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0279
Epoch 782/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0263
Epoch 783/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0258
Epoch 784/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0276
Epoch 785/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0273
Epoch 786/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0285
Epoch 787/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0259
Epoch 788/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0252
Epoch 789/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0269
Epoch 790/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0274
Epoch 791/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0265
Epoch 792/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0270
Epoch 793/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0264
Epoch 794/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0288
Epoch 795/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0244
Epoch 796/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0268
Epoch 797/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0250
Epoch 798/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0258
Epoch 799/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0238
Epoch 800/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0259
Epoch 801/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0267
Epoch 802/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0254
Epoch 803/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0247
Epoch 804/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0286
Epoch 805/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0270
Epoch 806/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0291
Epoch 807/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0305
Epoch 808/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0285
Epoch 809/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0452
Epoch 810/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1302
```

```
Epoch 811/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0870
Epoch 812/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0581
Epoch 813/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1940
Epoch 814/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1361
Epoch 815/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1209
Epoch 816/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1301
Epoch 817/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0840
Epoch 818/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1223
Epoch 819/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0704
Epoch 820/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0943
Epoch 821/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1504
Epoch 822/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0891
Epoch 823/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1507
Epoch 824/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1070
Epoch 825/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0883
Epoch 826/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0540
Epoch 827/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0471
Epoch 828/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0422
Epoch 829/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0384
Epoch 830/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0361
Epoch 831/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0409
Epoch 832/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0349
Epoch 833/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0291
Epoch 834/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0304
Epoch 835/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0284
Epoch 836/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0285
Epoch 837/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0256
Epoch 838/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0286
Epoch 839/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0366
Epoch 840/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0298
```

```
Epoch 841/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0432
Epoch 842/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0358
Epoch 843/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0303
Epoch 844/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0311
Epoch 845/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0255
Epoch 846/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0318
Epoch 847/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0304
Epoch 848/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0268
Epoch 849/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0275
Epoch 850/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0288
Epoch 851/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0251
Epoch 852/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0321
Epoch 853/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0356
Epoch 854/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0277
Epoch 855/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0289
Epoch 856/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0247
Epoch 857/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0272
Epoch 858/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0288
Epoch 859/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0297
Epoch 860/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0245
Epoch 861/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0234
Epoch 862/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0248
Epoch 863/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0235
Epoch 864/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0233
Epoch 865/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0229
Epoch 866/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0249
Epoch 867/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0243
Epoch 868/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0237
Epoch 869/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0242
Epoch 870/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0249
```

```
Epoch 871/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0245
Epoch 872/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0226
Epoch 873/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0231
Epoch 874/1000
13/13 [=====] - 0s 4ms/step - loss: 0.0236
Epoch 875/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0229
Epoch 876/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0261
Epoch 877/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0224
Epoch 878/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0236
Epoch 879/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0233
Epoch 880/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0224
Epoch 881/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0305
Epoch 882/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0978
Epoch 883/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0810
Epoch 884/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0306
Epoch 885/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0377
Epoch 886/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0348
Epoch 887/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0481
Epoch 888/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0354
Epoch 889/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0282
Epoch 890/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0278
Epoch 891/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0246
Epoch 892/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0243
Epoch 893/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0278
Epoch 894/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0247
Epoch 895/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0214
Epoch 896/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0280
Epoch 897/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0323
Epoch 898/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0351
Epoch 899/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0280
Epoch 900/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0277
```



```
Epoch 901/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0266
Epoch 902/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0281
Epoch 903/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0250
Epoch 904/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0249
Epoch 905/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0265
Epoch 906/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0333
Epoch 907/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0354
Epoch 908/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0654
Epoch 909/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0749
Epoch 910/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1291
Epoch 911/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2330
Epoch 912/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1484
Epoch 913/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1492
Epoch 914/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1516
Epoch 915/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 916/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1207
Epoch 917/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1094
Epoch 918/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0757
Epoch 919/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0851
Epoch 920/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0524
Epoch 921/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0683
Epoch 922/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0640
Epoch 923/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0360
Epoch 924/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0377
Epoch 925/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0274
Epoch 926/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0311
Epoch 927/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0336
Epoch 928/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0363
Epoch 929/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0351
Epoch 930/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0278
```

```
Epoch 931/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0276
Epoch 932/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0237
Epoch 933/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0269
Epoch 934/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0264
Epoch 935/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0303
Epoch 936/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0337
Epoch 937/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0322
Epoch 938/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0396
Epoch 939/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0420
Epoch 940/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0756
Epoch 941/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0750
Epoch 942/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0455
Epoch 943/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0505
Epoch 944/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0295
Epoch 945/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0301
Epoch 946/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0379
Epoch 947/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0291
Epoch 948/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0256
Epoch 949/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0236
Epoch 950/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0215
Epoch 951/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0245
Epoch 952/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0231
Epoch 953/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0428
Epoch 954/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0346
Epoch 955/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0242
Epoch 956/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0192
Epoch 957/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0200
Epoch 958/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0211
Epoch 959/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0206
Epoch 960/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0199
```

```
Epoch 961/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0199
Epoch 962/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0204
Epoch 963/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0201
Epoch 964/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0188
Epoch 965/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0192
Epoch 966/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0176
Epoch 967/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0215
Epoch 968/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0193
Epoch 969/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0195
Epoch 970/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0187
Epoch 971/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0193
Epoch 972/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0166
Epoch 973/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0187
Epoch 974/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0227
Epoch 975/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0191
Epoch 976/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0434
Epoch 977/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0556
Epoch 978/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0344
Epoch 979/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0284
Epoch 980/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0279
Epoch 981/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0278
Epoch 982/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0264
Epoch 983/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0258
Epoch 984/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0257
Epoch 985/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0307
Epoch 986/1000
13/13 [=====] - 0s 2ms/step - loss: 0.0313
Epoch 987/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0290
Epoch 988/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0284
Epoch 989/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0284
Epoch 990/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0290
```

```
Epoch 991/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0281
Epoch 992/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0258
Epoch 993/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0280
Epoch 994/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0270
Epoch 995/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0248
Epoch 996/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0244
Epoch 997/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0244
Epoch 998/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0243
Epoch 999/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0246
Epoch 1000/1000
13/13 [=====] - 0s 1ms/step - loss: 0.0266
Finished lambda = 0.0
Epoch 1/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1501
Epoch 2/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4807
Epoch 3/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4075
Epoch 4/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3551
Epoch 5/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3474
Epoch 6/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3498
Epoch 7/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3112
Epoch 8/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2910
Epoch 9/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2851
Epoch 10/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2667
Epoch 11/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2754
Epoch 12/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2677
Epoch 13/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2969
Epoch 14/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2784
Epoch 15/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2974
Epoch 16/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2570
Epoch 17/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2616
Epoch 18/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2656
Epoch 19/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2721
Epoch 20/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.2533
Epoch 21/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2691
Epoch 22/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2731
Epoch 23/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2782
Epoch 24/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2616
Epoch 25/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2723
Epoch 26/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2516
Epoch 27/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2526
Epoch 28/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2562
Epoch 29/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2612
Epoch 30/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2729
Epoch 31/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2557
Epoch 32/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2562
Epoch 33/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2418
Epoch 34/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2694
Epoch 35/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2604
Epoch 36/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2516
Epoch 37/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2518
Epoch 38/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2304
Epoch 39/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2413
Epoch 40/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2379
Epoch 41/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2612
Epoch 42/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2675
Epoch 43/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2527
Epoch 44/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2540
Epoch 45/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2701
Epoch 46/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2423
Epoch 47/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2354
Epoch 48/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2333
Epoch 49/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2278
Epoch 50/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.2283
Epoch 51/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2538
Epoch 52/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2437
Epoch 53/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2424
Epoch 54/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2244
Epoch 55/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2774
Epoch 56/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2468
Epoch 57/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2557
Epoch 58/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2552
Epoch 59/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2547
Epoch 60/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2632
Epoch 61/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2558
Epoch 62/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2339
Epoch 63/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2363
Epoch 64/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2674
Epoch 65/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2670
Epoch 66/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2589
Epoch 67/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2809
Epoch 68/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2938
Epoch 69/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2514
Epoch 70/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2474
Epoch 71/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2570
Epoch 72/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2277
Epoch 73/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2325
Epoch 74/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2463
Epoch 75/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2489
Epoch 76/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2414
Epoch 77/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2462
Epoch 78/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2337
Epoch 79/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2351
Epoch 80/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.2398
Epoch 81/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2463
Epoch 82/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2394
Epoch 83/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2314
Epoch 84/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2323
Epoch 85/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2453
Epoch 86/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2295
Epoch 87/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2305
Epoch 88/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2362
Epoch 89/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2367
Epoch 90/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2273
Epoch 91/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2207
Epoch 92/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2192
Epoch 93/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2247
Epoch 94/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2235
Epoch 95/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2409
Epoch 96/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2399
Epoch 97/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2487
Epoch 98/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2604
Epoch 99/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2516
Epoch 100/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2250
Epoch 101/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2409
Epoch 102/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2377
Epoch 103/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2554
Epoch 104/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2298
Epoch 105/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2252
Epoch 106/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2217
Epoch 107/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2312
Epoch 108/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2165
Epoch 109/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2202
Epoch 110/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.2276
Epoch 111/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2257
Epoch 112/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2370
Epoch 113/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2288
Epoch 114/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2189
Epoch 115/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2116
Epoch 116/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2232
Epoch 117/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2187
Epoch 118/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2163
Epoch 119/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2267
Epoch 120/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2146
Epoch 121/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2261
Epoch 122/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2245
Epoch 123/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2198
Epoch 124/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2141
Epoch 125/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2087
Epoch 126/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2303
Epoch 127/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2215
Epoch 128/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2172
Epoch 129/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2156
Epoch 130/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2169
Epoch 131/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2217
Epoch 132/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2127
Epoch 133/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2055
Epoch 134/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2141
Epoch 135/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2109
Epoch 136/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2109
Epoch 137/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2180
Epoch 138/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2231
Epoch 139/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2148
Epoch 140/1000
```



```
13/13 [=====] - 0s 1ms/step - loss: 0.2138
Epoch 141/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2098
Epoch 142/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2060
Epoch 143/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2111
Epoch 144/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2196
Epoch 145/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2230
Epoch 146/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2121
Epoch 147/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2103
Epoch 148/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2144
Epoch 149/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2085
Epoch 150/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2117
Epoch 151/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2192
Epoch 152/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2196
Epoch 153/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2160
Epoch 154/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2124
Epoch 155/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2147
Epoch 156/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2154
Epoch 157/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2219
Epoch 158/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2195
Epoch 159/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2035
Epoch 160/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2058
Epoch 161/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2059
Epoch 162/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2130
Epoch 163/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2254
Epoch 164/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2363
Epoch 165/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2226
Epoch 166/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2162
Epoch 167/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2114
Epoch 168/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2186
Epoch 169/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2137
Epoch 170/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.2202
Epoch 171/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2121
Epoch 172/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2055
Epoch 173/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2194
Epoch 174/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2111
Epoch 175/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2026
Epoch 176/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2115
Epoch 177/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2075
Epoch 178/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2196
Epoch 179/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2191
Epoch 180/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2091
Epoch 181/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2241
Epoch 182/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2125
Epoch 183/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2074
Epoch 184/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2134
Epoch 185/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2121
Epoch 186/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2009
Epoch 187/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2037
Epoch 188/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2055
Epoch 189/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2053
Epoch 190/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2140
Epoch 191/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2143
Epoch 192/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2052
Epoch 193/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2132
Epoch 194/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2059
Epoch 195/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1956
Epoch 196/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1965
Epoch 197/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2045
Epoch 198/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2076
Epoch 199/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2260
Epoch 200/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.2107
Epoch 201/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2002
Epoch 202/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2017
Epoch 203/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1934
Epoch 204/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2171
Epoch 205/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1995
Epoch 206/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2020
Epoch 207/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2117
Epoch 208/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2132
Epoch 209/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1952
Epoch 210/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2083
Epoch 211/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2078
Epoch 212/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2096
Epoch 213/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2100
Epoch 214/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2090
Epoch 215/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2108
Epoch 216/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2098
Epoch 217/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2149
Epoch 218/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2023
Epoch 219/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2019
Epoch 220/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2034
Epoch 221/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2004
Epoch 222/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1974
Epoch 223/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2082
Epoch 224/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2252
Epoch 225/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2099
Epoch 226/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2117
Epoch 227/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1911
Epoch 228/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1960
Epoch 229/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2009
Epoch 230/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.2131
Epoch 231/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2371
Epoch 232/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2202
Epoch 233/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2037
Epoch 234/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1955
Epoch 235/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2139
Epoch 236/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2067
Epoch 237/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2012
Epoch 238/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2273
Epoch 239/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2171
Epoch 240/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2070
Epoch 241/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1990
Epoch 242/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2162
Epoch 243/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2140
Epoch 244/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2093
Epoch 245/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2008
Epoch 246/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2019
Epoch 247/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1936
Epoch 248/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1866
Epoch 249/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2010
Epoch 250/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1966
Epoch 251/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1959
Epoch 252/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1900
Epoch 253/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1963
Epoch 254/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2003
Epoch 255/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2042
Epoch 256/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1916
Epoch 257/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2079
Epoch 258/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2049
Epoch 259/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1879
Epoch 260/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1977
Epoch 261/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1979
Epoch 262/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2002
Epoch 263/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1939
Epoch 264/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1958
Epoch 265/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1937
Epoch 266/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1932
Epoch 267/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1971
Epoch 268/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1913
Epoch 269/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1965
Epoch 270/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1921
Epoch 271/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1913
Epoch 272/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1941
Epoch 273/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2040
Epoch 274/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1973
Epoch 275/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2106
Epoch 276/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1961
Epoch 277/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1936
Epoch 278/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1878
Epoch 279/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2007
Epoch 280/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1961
Epoch 281/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1946
Epoch 282/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1903
Epoch 283/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2036
Epoch 284/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1878
Epoch 285/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1876
Epoch 286/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1955
Epoch 287/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1963
Epoch 288/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2203
Epoch 289/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2042
Epoch 290/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.2111
Epoch 291/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1949
Epoch 292/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1860
Epoch 293/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1901
Epoch 294/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1911
Epoch 295/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2011
Epoch 296/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1986
Epoch 297/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1893
Epoch 298/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2020
Epoch 299/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1892
Epoch 300/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1957
Epoch 301/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1949
Epoch 302/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2029
Epoch 303/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2182
Epoch 304/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1989
Epoch 305/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2006
Epoch 306/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1959
Epoch 307/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2054
Epoch 308/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1940
Epoch 309/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1905
Epoch 310/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1901
Epoch 311/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1882
Epoch 312/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1857
Epoch 313/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1928
Epoch 314/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1836
Epoch 315/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1915
Epoch 316/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1902
Epoch 317/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1868
Epoch 318/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2042
Epoch 319/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1968
Epoch 320/1000
```

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13/13 [=====] - 0s 1ms/step - loss: 0.1853
Epoch 321/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1836
Epoch 322/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1881
Epoch 323/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2055
Epoch 324/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1825
Epoch 325/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1875
Epoch 326/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1775
Epoch 327/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1895
Epoch 328/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1953
Epoch 329/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2007
Epoch 330/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1911
Epoch 331/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1913
Epoch 332/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2039
Epoch 333/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1997
Epoch 334/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2098
Epoch 335/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1978
Epoch 336/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1919
Epoch 337/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1865
Epoch 338/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1882
Epoch 339/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1895
Epoch 340/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1916
Epoch 341/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1882
Epoch 342/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1820
Epoch 343/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1761
Epoch 344/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1821
Epoch 345/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1983
Epoch 346/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1923
Epoch 347/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1918
Epoch 348/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1948
Epoch 349/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1803
Epoch 350/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1776
Epoch 351/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1810
Epoch 352/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1920
Epoch 353/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1985
Epoch 354/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1914
Epoch 355/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1927
Epoch 356/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1817
Epoch 357/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1800
Epoch 358/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1896
Epoch 359/1000
13/13 [=====] - 0s 3ms/step - loss: 0.1805
Epoch 360/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2033
Epoch 361/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1909
Epoch 362/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2070
Epoch 363/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1834
Epoch 364/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1848
Epoch 365/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1932
Epoch 366/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1849
Epoch 367/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1824
Epoch 368/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1742
Epoch 369/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1790
Epoch 370/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1873
Epoch 371/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1748
Epoch 372/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1755
Epoch 373/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1847
Epoch 374/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1760
Epoch 375/1000
13/13 [=====] - 0s 3ms/step - loss: 0.1861
Epoch 376/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1775
Epoch 377/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1752
Epoch 378/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1798
Epoch 379/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1863
Epoch 380/1000
```



```
13/13 [=====] - 0s 1ms/step - loss: 0.1829
Epoch 381/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1840
Epoch 382/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1886
Epoch 383/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1943
Epoch 384/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1889
Epoch 385/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1779
Epoch 386/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1781
Epoch 387/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1832
Epoch 388/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1829
Epoch 389/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1927
Epoch 390/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2082
Epoch 391/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1937
Epoch 392/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1829
Epoch 393/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1756
Epoch 394/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1751
Epoch 395/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1834
Epoch 396/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1839
Epoch 397/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1947
Epoch 398/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1901
Epoch 399/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1848
Epoch 400/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1792
Epoch 401/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1845
Epoch 402/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 403/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1768
Epoch 404/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 405/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1698
Epoch 406/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1785
Epoch 407/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1733
Epoch 408/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1819
Epoch 409/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1822
Epoch 410/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1806
Epoch 411/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1906
Epoch 412/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1848
Epoch 413/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1860
Epoch 414/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1742
Epoch 415/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1720
Epoch 416/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1800
Epoch 417/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1828
Epoch 418/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1749
Epoch 419/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1733
Epoch 420/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 421/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 422/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1728
Epoch 423/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1786
Epoch 424/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1839
Epoch 425/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1782
Epoch 426/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1772
Epoch 427/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1703
Epoch 428/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1760
Epoch 429/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1677
Epoch 430/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1713
Epoch 431/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1694
Epoch 432/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 433/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1849
Epoch 434/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1701
Epoch 435/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1801
Epoch 436/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1983
Epoch 437/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1760
Epoch 438/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1809
Epoch 439/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1749
Epoch 440/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 441/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1685
Epoch 442/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1714
Epoch 443/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1794
Epoch 444/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1716
Epoch 445/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1804
Epoch 446/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1901
Epoch 447/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1848
Epoch 448/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1756
Epoch 449/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1739
Epoch 450/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1755
Epoch 451/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1782
Epoch 452/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1735
Epoch 453/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 454/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 455/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1717
Epoch 456/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1672
Epoch 457/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1764
Epoch 458/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1732
Epoch 459/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1811
Epoch 460/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1697
Epoch 461/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1772
Epoch 462/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1693
Epoch 463/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1771
Epoch 464/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1756
Epoch 465/1000
13/13 [=====] - 0s 3ms/step - loss: 0.1815
Epoch 466/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1784
Epoch 467/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1785
Epoch 468/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1755
Epoch 469/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1689
Epoch 470/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1724
Epoch 471/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1816
Epoch 472/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1698
Epoch 473/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1681
Epoch 474/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1749
Epoch 475/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1883
Epoch 476/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1756
Epoch 477/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1827
Epoch 478/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1972
Epoch 479/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1800
Epoch 480/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1793
Epoch 481/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1768
Epoch 482/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1783
Epoch 483/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1737
Epoch 484/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1777
Epoch 485/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1740
Epoch 486/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 487/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1699
Epoch 488/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1699
Epoch 489/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1710
Epoch 490/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1797
Epoch 491/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1743
Epoch 492/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1780
Epoch 493/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1795
Epoch 494/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1841
Epoch 495/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1749
Epoch 496/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1793
Epoch 497/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1667
Epoch 498/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1687
Epoch 499/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1683
Epoch 500/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1715
Epoch 501/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1681
Epoch 502/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1828
Epoch 503/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1806
Epoch 504/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1684
Epoch 505/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1640
Epoch 506/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
Epoch 507/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1715
Epoch 508/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1603
Epoch 509/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1641
Epoch 510/1000
13/13 [=====] - 0s 3ms/step - loss: 0.1702
Epoch 511/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1668
Epoch 512/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1729
Epoch 513/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1696
Epoch 514/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1671
Epoch 515/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1612
Epoch 516/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1645
Epoch 517/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1650
Epoch 518/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1657
Epoch 519/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1849
Epoch 520/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1685
Epoch 521/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1855
Epoch 522/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1731
Epoch 523/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1725
Epoch 524/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1659
Epoch 525/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1639
Epoch 526/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1638
Epoch 527/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1747
Epoch 528/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1788
Epoch 529/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1793
Epoch 530/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1693
Epoch 531/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1653
Epoch 532/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1648
Epoch 533/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1652
Epoch 534/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1715
Epoch 535/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 536/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1720
Epoch 537/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1728
Epoch 538/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1667
Epoch 539/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1649
Epoch 540/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1701
Epoch 541/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1744
Epoch 542/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1594
Epoch 543/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1637
Epoch 544/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1659
Epoch 545/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1651
Epoch 546/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1646
Epoch 547/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1655
Epoch 548/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1647
Epoch 549/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1765
Epoch 550/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1816
Epoch 551/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1813
Epoch 552/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1809
Epoch 553/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1742
Epoch 554/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1687
Epoch 555/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1696
Epoch 556/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1684
Epoch 557/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1599
Epoch 558/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1620
Epoch 559/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1685
Epoch 560/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1677
Epoch 561/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1750
Epoch 562/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1678
Epoch 563/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1675
Epoch 564/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1566
Epoch 565/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1615
Epoch 566/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1718
Epoch 567/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1720
Epoch 568/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1718
Epoch 569/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1677
Epoch 570/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1623
Epoch 571/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1623
Epoch 572/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1695
Epoch 573/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1639
Epoch 574/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1630
Epoch 575/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1624
Epoch 576/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1633
Epoch 577/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1659
Epoch 578/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1668
Epoch 579/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1619
Epoch 580/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1705
Epoch 581/1000
13/13 [=====] - 0s 3ms/step - loss: 0.1664
Epoch 582/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1572
Epoch 583/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1631
Epoch 584/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1671
Epoch 585/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1610
Epoch 586/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1676
Epoch 587/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1650
Epoch 588/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1632
Epoch 589/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1650
Epoch 590/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1657
Epoch 591/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1853
Epoch 592/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1860
Epoch 593/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1763
Epoch 594/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1641
Epoch 595/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1694
Epoch 596/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1637
Epoch 597/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1595
Epoch 598/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1633
Epoch 599/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1693
Epoch 600/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1659
Epoch 601/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1585
Epoch 602/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1619
Epoch 603/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1633
Epoch 604/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1600
Epoch 605/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1690
Epoch 606/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1667
Epoch 607/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1659
Epoch 608/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1696
Epoch 609/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1584
Epoch 610/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1660
Epoch 611/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1698
Epoch 612/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1603
Epoch 613/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1733
Epoch 614/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1731
Epoch 615/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1676
Epoch 616/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1577
Epoch 617/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1638
Epoch 618/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1673
Epoch 619/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1709
Epoch 620/1000
```



```
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 621/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1818
Epoch 622/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1730
Epoch 623/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1718
Epoch 624/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1677
Epoch 625/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1623
Epoch 626/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1702
Epoch 627/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1647
Epoch 628/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1643
Epoch 629/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1605
Epoch 630/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1691
Epoch 631/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1651
Epoch 632/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1587
Epoch 633/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1610
Epoch 634/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1541
Epoch 635/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1622
Epoch 636/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1662
Epoch 637/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1760
Epoch 638/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1617
Epoch 639/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1542
Epoch 640/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1616
Epoch 641/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1593
Epoch 642/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1568
Epoch 643/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1604
Epoch 644/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1608
Epoch 645/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1692
Epoch 646/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1714
Epoch 647/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1565
Epoch 648/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1616
Epoch 649/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1605
Epoch 650/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 651/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1597
Epoch 652/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1583
Epoch 653/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1570
Epoch 654/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1655
Epoch 655/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1575
Epoch 656/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1535
Epoch 657/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1569
Epoch 658/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1630
Epoch 659/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1563
Epoch 660/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1628
Epoch 661/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1581
Epoch 662/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1696
Epoch 663/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1585
Epoch 664/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1654
Epoch 665/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1607
Epoch 666/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1576
Epoch 667/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1542
Epoch 668/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1576
Epoch 669/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1644
Epoch 670/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1629
Epoch 671/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1563
Epoch 672/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1578
Epoch 673/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1600
Epoch 674/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1722
Epoch 675/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1720
Epoch 676/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1567
Epoch 677/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1591
Epoch 678/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1599
Epoch 679/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 680/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1697
Epoch 681/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1703
Epoch 682/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1710
Epoch 683/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1636
Epoch 684/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1645
Epoch 685/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1894
Epoch 686/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1801
Epoch 687/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1659
Epoch 688/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1641
Epoch 689/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1617
Epoch 690/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1580
Epoch 691/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1559
Epoch 692/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1533
Epoch 693/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1656
Epoch 694/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1629
Epoch 695/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1569
Epoch 696/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1555
Epoch 697/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1613
Epoch 698/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1603
Epoch 699/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1563
Epoch 700/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1541
Epoch 701/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1541
Epoch 702/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1576
Epoch 703/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1533
Epoch 704/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1598
Epoch 705/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1585
Epoch 706/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1513
Epoch 707/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1603
Epoch 708/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1627
Epoch 709/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1754
Epoch 710/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1741
Epoch 711/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1654
Epoch 712/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1601
Epoch 713/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1624
Epoch 714/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1507
Epoch 715/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1572
Epoch 716/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1575
Epoch 717/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1597
Epoch 718/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1701
Epoch 719/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1807
Epoch 720/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1687
Epoch 721/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1779
Epoch 722/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1599
Epoch 723/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1622
Epoch 724/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1516
Epoch 725/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1605
Epoch 726/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1555
Epoch 727/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1606
Epoch 728/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1586
Epoch 729/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1550
Epoch 730/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1614
Epoch 731/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1594
Epoch 732/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1812
Epoch 733/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1655
Epoch 734/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1736
Epoch 735/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1773
Epoch 736/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1726
Epoch 737/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1668
Epoch 738/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1684
Epoch 739/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1623
Epoch 740/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1615
Epoch 741/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1661
Epoch 742/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1568
Epoch 743/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1539
Epoch 744/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1560
Epoch 745/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1559
Epoch 746/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1542
Epoch 747/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1585
Epoch 748/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1581
Epoch 749/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1581
Epoch 750/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1593
Epoch 751/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1544
Epoch 752/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1520
Epoch 753/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1490
Epoch 754/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1628
Epoch 755/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1539
Epoch 756/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1552
Epoch 757/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1595
Epoch 758/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1493
Epoch 759/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1527
Epoch 760/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1607
Epoch 761/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1578
Epoch 762/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1578
Epoch 763/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1659
Epoch 764/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1824
Epoch 765/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1574
Epoch 766/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1671
Epoch 767/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1665
Epoch 768/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1643
Epoch 769/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1545
Epoch 770/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1537
Epoch 771/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1588
Epoch 772/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1478
Epoch 773/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1532
Epoch 774/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1620
Epoch 775/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1618
Epoch 776/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1491
Epoch 777/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1531
Epoch 778/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1625
Epoch 779/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1628
Epoch 780/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1531
Epoch 781/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1493
Epoch 782/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1556
Epoch 783/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1513
Epoch 784/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1553
Epoch 785/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1532
Epoch 786/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1585
Epoch 787/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1600
Epoch 788/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1532
Epoch 789/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1511
Epoch 790/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1538
Epoch 791/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1522
Epoch 792/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1525
Epoch 793/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1549
Epoch 794/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1536
Epoch 795/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1498
Epoch 796/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1493
Epoch 797/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1552
Epoch 798/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1532
Epoch 799/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1467
Epoch 800/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.1448
Epoch 801/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1529
Epoch 802/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1527
Epoch 803/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1502
Epoch 804/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1562
Epoch 805/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1537
Epoch 806/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1585
Epoch 807/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1664
Epoch 808/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1498
Epoch 809/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1482
Epoch 810/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1822
Epoch 811/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1703
Epoch 812/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1815
Epoch 813/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1733
Epoch 814/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1599
Epoch 815/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1604
Epoch 816/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1516
Epoch 817/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1517
Epoch 818/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1484
Epoch 819/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1642
Epoch 820/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1549
Epoch 821/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1613
Epoch 822/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1554
Epoch 823/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1599
Epoch 824/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1738
Epoch 825/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1636
Epoch 826/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1509
Epoch 827/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1530
Epoch 828/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1539
Epoch 829/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1548
Epoch 830/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1429
Epoch 831/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1515
Epoch 832/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1489
Epoch 833/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1549
Epoch 834/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1502
Epoch 835/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1515
Epoch 836/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1541
Epoch 837/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1546
Epoch 838/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1512
Epoch 839/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1526
Epoch 840/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1535
Epoch 841/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1571
Epoch 842/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1605
Epoch 843/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1516
Epoch 844/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1503
Epoch 845/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1542
Epoch 846/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1589
Epoch 847/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1574
Epoch 848/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1613
Epoch 849/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1483
Epoch 850/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1496
Epoch 851/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1482
Epoch 852/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1584
Epoch 853/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1520
Epoch 854/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1476
Epoch 855/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1572
Epoch 856/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1535
Epoch 857/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1822
Epoch 858/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1674
Epoch 859/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1586
Epoch 860/1000
```



```
13/13 [=====] - 0s 1ms/step - loss: 0.1567
Epoch 861/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1563
Epoch 862/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1577
Epoch 863/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1479
Epoch 864/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1546
Epoch 865/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1497
Epoch 866/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1586
Epoch 867/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1487
Epoch 868/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1571
Epoch 869/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1497
Epoch 870/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1604
Epoch 871/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1581
Epoch 872/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1447
Epoch 873/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1494
Epoch 874/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1488
Epoch 875/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1512
Epoch 876/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1547
Epoch 877/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1517
Epoch 878/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1519
Epoch 879/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1532
Epoch 880/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1535
Epoch 881/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1571
Epoch 882/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1548
Epoch 883/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1607
Epoch 884/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1491
Epoch 885/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1486
Epoch 886/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1485
Epoch 887/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1464
Epoch 888/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1487
Epoch 889/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1441
Epoch 890/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.1529
Epoch 891/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1622
Epoch 892/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1648
Epoch 893/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1648
Epoch 894/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1559
Epoch 895/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1524
Epoch 896/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1505
Epoch 897/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1612
Epoch 898/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1552
Epoch 899/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1607
Epoch 900/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1505
Epoch 901/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1444
Epoch 902/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1489
Epoch 903/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1531
Epoch 904/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1514
Epoch 905/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1622
Epoch 906/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1545
Epoch 907/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1589
Epoch 908/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1486
Epoch 909/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1453
Epoch 910/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1503
Epoch 911/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1485
Epoch 912/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1468
Epoch 913/1000
13/13 [=====] - 0s 3ms/step - loss: 0.1486
Epoch 914/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1435
Epoch 915/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1552
Epoch 916/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1516
Epoch 917/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1514
Epoch 918/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1581
Epoch 919/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1536
Epoch 920/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1495
Epoch 921/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1585
Epoch 922/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1439
Epoch 923/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1523
Epoch 924/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1446
Epoch 925/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1566
Epoch 926/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1472
Epoch 927/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1477
Epoch 928/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1501
Epoch 929/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1498
Epoch 930/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1472
Epoch 931/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1481
Epoch 932/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1512
Epoch 933/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1586
Epoch 934/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1628
Epoch 935/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1541
Epoch 936/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1436
Epoch 937/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1524
Epoch 938/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1609
Epoch 939/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1636
Epoch 940/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1526
Epoch 941/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1522
Epoch 942/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1455
Epoch 943/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1456
Epoch 944/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1569
Epoch 945/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1564
Epoch 946/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1461
Epoch 947/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1520
Epoch 948/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1630
Epoch 949/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1513
Epoch 950/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1482
Epoch 951/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1584
Epoch 952/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1639
Epoch 953/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1609
Epoch 954/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1509
Epoch 955/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1525
Epoch 956/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1506
Epoch 957/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1417
Epoch 958/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1514
Epoch 959/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1492
Epoch 960/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1461
Epoch 961/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1416
Epoch 962/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1561
Epoch 963/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1667
Epoch 964/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1463
Epoch 965/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1463
Epoch 966/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1483
Epoch 967/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1512
Epoch 968/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1566
Epoch 969/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1541
Epoch 970/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1591
Epoch 971/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1543
Epoch 972/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1481
Epoch 973/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1517
Epoch 974/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1559
Epoch 975/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1507
Epoch 976/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1470
Epoch 977/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1497
Epoch 978/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1580
Epoch 979/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1562
Epoch 980/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.1585
Epoch 981/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1690
Epoch 982/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1511
Epoch 983/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1500
Epoch 984/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1486
Epoch 985/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1544
Epoch 986/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1474
Epoch 987/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1402
Epoch 988/1000
13/13 [=====] - 0s 2ms/step - loss: 0.1528
Epoch 989/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1576
Epoch 990/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1546
Epoch 991/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1556
Epoch 992/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1601
Epoch 993/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1571
Epoch 994/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1477
Epoch 995/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1471
Epoch 996/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1417
Epoch 997/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1592
Epoch 998/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1637
Epoch 999/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1588
Epoch 1000/1000
13/13 [=====] - 0s 1ms/step - loss: 0.1526
Finished lambda = 0.001
Epoch 1/1000
13/13 [=====] - 0s 1ms/step - loss: 1.5164
Epoch 2/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8034
Epoch 3/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6352
Epoch 4/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5561
Epoch 5/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5160
Epoch 6/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4883
Epoch 7/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4985
Epoch 8/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4832
Epoch 9/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4366
```

```
Epoch 10/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4030
Epoch 11/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4104
Epoch 12/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4116
Epoch 13/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4526
Epoch 14/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4567
Epoch 15/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4394
Epoch 16/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4190
Epoch 17/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3933
Epoch 18/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3658
Epoch 19/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3804
Epoch 20/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3687
Epoch 21/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3597
Epoch 22/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3685
Epoch 23/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3614
Epoch 24/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3601
Epoch 25/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4504
Epoch 26/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4158
Epoch 27/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3975
Epoch 28/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3666
Epoch 29/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3408
Epoch 30/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3676
Epoch 31/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3563
Epoch 32/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3588
Epoch 33/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3372
Epoch 34/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3476
Epoch 35/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3578
Epoch 36/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3386
Epoch 37/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3372
Epoch 38/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3284
Epoch 39/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3405
```

```
Epoch 40/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3308
Epoch 41/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3558
Epoch 42/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3620
Epoch 43/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3621
Epoch 44/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3475
Epoch 45/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3409
Epoch 46/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3324
Epoch 47/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3349
Epoch 48/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3429
Epoch 49/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3301
Epoch 50/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3174
Epoch 51/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3193
Epoch 52/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3359
Epoch 53/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3387
Epoch 54/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3160
Epoch 55/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3554
Epoch 56/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3345
Epoch 57/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3317
Epoch 58/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3048
Epoch 59/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3373
Epoch 60/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3650
Epoch 61/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3591
Epoch 62/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3336
Epoch 63/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3267
Epoch 64/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3604
Epoch 65/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3631
Epoch 66/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3431
Epoch 67/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3591
Epoch 68/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3489
Epoch 69/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3227
```

```
Epoch 70/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3173
Epoch 71/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3261
Epoch 72/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2992
Epoch 73/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3046
Epoch 74/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3088
Epoch 75/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3227
Epoch 76/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3213
Epoch 77/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3169
Epoch 78/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3121
Epoch 79/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3028
Epoch 80/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3048
Epoch 81/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3158
Epoch 82/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3191
Epoch 83/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2904
Epoch 84/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2978
Epoch 85/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3201
Epoch 86/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3077
Epoch 87/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3360
Epoch 88/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3095
Epoch 89/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3083
Epoch 90/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2833
Epoch 91/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3045
Epoch 92/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2940
Epoch 93/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2892
Epoch 94/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3004
Epoch 95/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3122
Epoch 96/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2837
Epoch 97/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2894
Epoch 98/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3007
Epoch 99/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3377
```



```
Epoch 100/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2895
Epoch 101/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3208
Epoch 102/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2878
Epoch 103/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3300
Epoch 104/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3022
Epoch 105/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3072
Epoch 106/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2784
Epoch 107/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3521
Epoch 108/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2887
Epoch 109/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2865
Epoch 110/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2852
Epoch 111/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2803
Epoch 112/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2919
Epoch 113/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2846
Epoch 114/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2857
Epoch 115/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2821
Epoch 116/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2930
Epoch 117/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2829
Epoch 118/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2754
Epoch 119/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3010
Epoch 120/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3163
Epoch 121/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3225
Epoch 122/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2998
Epoch 123/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2915
Epoch 124/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2826
Epoch 125/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2732
Epoch 126/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2825
Epoch 127/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2988
Epoch 128/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2936
Epoch 129/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2993
```

```
Epoch 130/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2912
Epoch 131/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2855
Epoch 132/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2692
Epoch 133/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2792
Epoch 134/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2972
Epoch 135/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3009
Epoch 136/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2900
Epoch 137/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2807
Epoch 138/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2909
Epoch 139/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3313
Epoch 140/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3278
Epoch 141/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2966
Epoch 142/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2806
Epoch 143/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2779
Epoch 144/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3005
Epoch 145/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2793
Epoch 146/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2742
Epoch 147/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2812
Epoch 148/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2682
Epoch 149/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2744
Epoch 150/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2821
Epoch 151/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2830
Epoch 152/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2747
Epoch 153/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2866
Epoch 154/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2745
Epoch 155/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2730
Epoch 156/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2897
Epoch 157/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2809
Epoch 158/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2853
Epoch 159/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2726
```

```
Epoch 160/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2671
Epoch 161/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2709
Epoch 162/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2762
Epoch 163/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2866
Epoch 164/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2919
Epoch 165/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3008
Epoch 166/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3019
Epoch 167/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2989
Epoch 168/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2832
Epoch 169/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2858
Epoch 170/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2884
Epoch 171/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2705
Epoch 172/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2628
Epoch 173/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2842
Epoch 174/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2968
Epoch 175/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2913
Epoch 176/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2797
Epoch 177/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2680
Epoch 178/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2891
Epoch 179/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2895
Epoch 180/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2633
Epoch 181/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2860
Epoch 182/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2708
Epoch 183/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2549
Epoch 184/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2737
Epoch 185/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2642
Epoch 186/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2860
Epoch 187/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2890
Epoch 188/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2801
Epoch 189/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2605
```

```
Epoch 190/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2675
Epoch 191/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2853
Epoch 192/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2731
Epoch 193/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2926
Epoch 194/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2831
Epoch 195/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2726
Epoch 196/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2637
Epoch 197/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2732
Epoch 198/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2819
Epoch 199/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2859
Epoch 200/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2747
Epoch 201/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2754
Epoch 202/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2628
Epoch 203/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2655
Epoch 204/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3022
Epoch 205/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2825
Epoch 206/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2541
Epoch 207/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2728
Epoch 208/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2759
Epoch 209/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2713
Epoch 210/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2710
Epoch 211/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2856
Epoch 212/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2800
Epoch 213/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2752
Epoch 214/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2730
Epoch 215/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2739
Epoch 216/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2672
Epoch 217/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2681
Epoch 218/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2737
Epoch 219/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2689
```

```
Epoch 220/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2624
Epoch 221/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2648
Epoch 222/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2697
Epoch 223/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2632
Epoch 224/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2799
Epoch 225/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2673
Epoch 226/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2655
Epoch 227/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2638
Epoch 228/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2555
Epoch 229/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2708
Epoch 230/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2699
Epoch 231/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2997
Epoch 232/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2773
Epoch 233/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2844
Epoch 234/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2663
Epoch 235/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2647
Epoch 236/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2623
Epoch 237/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2628
Epoch 238/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3050
Epoch 239/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2786
Epoch 240/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2670
Epoch 241/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2578
Epoch 242/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2797
Epoch 243/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2687
Epoch 244/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2881
Epoch 245/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2653
Epoch 246/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2688
Epoch 247/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2563
Epoch 248/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2709
Epoch 249/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2742
```

```
Epoch 250/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2640
Epoch 251/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2753
Epoch 252/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2566
Epoch 253/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2605
Epoch 254/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2908
Epoch 255/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2773
Epoch 256/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2718
Epoch 257/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2978
Epoch 258/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2745
Epoch 259/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2557
Epoch 260/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2600
Epoch 261/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2808
Epoch 262/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2662
Epoch 263/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2664
Epoch 264/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2565
Epoch 265/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2722
Epoch 266/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2851
Epoch 267/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2847
Epoch 268/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2690
Epoch 269/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2609
Epoch 270/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2683
Epoch 271/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2630
Epoch 272/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2671
Epoch 273/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2770
Epoch 274/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2583
Epoch 275/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2882
Epoch 276/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2643
Epoch 277/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2670
Epoch 278/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2638
Epoch 279/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2702
```

```
Epoch 280/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2624
Epoch 281/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2681
Epoch 282/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2582
Epoch 283/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2655
Epoch 284/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2683
Epoch 285/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2584
Epoch 286/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2597
Epoch 287/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2632
Epoch 288/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2785
Epoch 289/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2714
Epoch 290/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2767
Epoch 291/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2589
Epoch 292/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2540
Epoch 293/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2622
Epoch 294/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2676
Epoch 295/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2679
Epoch 296/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2673
Epoch 297/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2648
Epoch 298/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2691
Epoch 299/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2555
Epoch 300/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2878
Epoch 301/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2626
Epoch 302/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2603
Epoch 303/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2618
Epoch 304/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2746
Epoch 305/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2867
Epoch 306/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2611
Epoch 307/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2699
Epoch 308/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2663
Epoch 309/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2609
```

```
Epoch 310/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2595
Epoch 311/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2521
Epoch 312/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2526
Epoch 313/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3001
Epoch 314/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2676
Epoch 315/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2692
Epoch 316/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2616
Epoch 317/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2548
Epoch 318/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2536
Epoch 319/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2742
Epoch 320/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2545
Epoch 321/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2493
Epoch 322/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2484
Epoch 323/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2728
Epoch 324/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2732
Epoch 325/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2781
Epoch 326/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2581
Epoch 327/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2583
Epoch 328/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2775
Epoch 329/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2625
Epoch 330/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2543
Epoch 331/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2630
Epoch 332/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2661
Epoch 333/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2604
Epoch 334/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2660
Epoch 335/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2578
Epoch 336/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2809
Epoch 337/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2685
Epoch 338/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2575
Epoch 339/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2566
```



```
Epoch 340/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2788
Epoch 341/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2675
Epoch 342/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2659
Epoch 343/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2560
Epoch 344/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2488
Epoch 345/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2563
Epoch 346/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2726
Epoch 347/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2484
Epoch 348/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2612
Epoch 349/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2514
Epoch 350/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2738
Epoch 351/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2498
Epoch 352/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2702
Epoch 353/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2771
Epoch 354/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2535
Epoch 355/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2691
Epoch 356/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2573
Epoch 357/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2506
Epoch 358/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2813
Epoch 359/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2517
Epoch 360/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2744
Epoch 361/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2669
Epoch 362/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2840
Epoch 363/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2893
Epoch 364/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2678
Epoch 365/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2569
Epoch 366/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2558
Epoch 367/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2817
Epoch 368/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2804
Epoch 369/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2693
```

```
Epoch 370/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2571
Epoch 371/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2555
Epoch 372/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2426
Epoch 373/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2590
Epoch 374/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2454
Epoch 375/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2596
Epoch 376/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2542
Epoch 377/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2469
Epoch 378/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2670
Epoch 379/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2535
Epoch 380/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2496
Epoch 381/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2631
Epoch 382/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2555
Epoch 383/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2711
Epoch 384/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2936
Epoch 385/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2696
Epoch 386/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2515
Epoch 387/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2590
Epoch 388/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2683
Epoch 389/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2664
Epoch 390/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2499
Epoch 391/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2624
Epoch 392/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2657
Epoch 393/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2508
Epoch 394/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2505
Epoch 395/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2466
Epoch 396/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2523
Epoch 397/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2666
Epoch 398/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2752
Epoch 399/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2589
```

```
Epoch 400/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2642
Epoch 401/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2581
Epoch 402/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2502
Epoch 403/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2589
Epoch 404/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2694
Epoch 405/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2641
Epoch 406/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2460
Epoch 407/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2516
Epoch 408/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2603
Epoch 409/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2480
Epoch 410/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2456
Epoch 411/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2792
Epoch 412/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2651
Epoch 413/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2468
Epoch 414/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2457
Epoch 415/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2581
Epoch 416/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2648
Epoch 417/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2635
Epoch 418/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2536
Epoch 419/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2616
Epoch 420/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2614
Epoch 421/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2824
Epoch 422/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2424
Epoch 423/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2473
Epoch 424/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2536
Epoch 425/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2488
Epoch 426/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2468
Epoch 427/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2453
Epoch 428/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2538
Epoch 429/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2445
```

```
Epoch 430/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2476
Epoch 431/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2451
Epoch 432/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2496
Epoch 433/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2633
Epoch 434/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2639
Epoch 435/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2478
Epoch 436/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2682
Epoch 437/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2658
Epoch 438/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2592
Epoch 439/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2639
Epoch 440/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2484
Epoch 441/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2567
Epoch 442/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2532
Epoch 443/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2597
Epoch 444/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2478
Epoch 445/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2632
Epoch 446/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2779
Epoch 447/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2954
Epoch 448/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2667
Epoch 449/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2428
Epoch 450/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2475
Epoch 451/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2533
Epoch 452/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2495
Epoch 453/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2456
Epoch 454/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2464
Epoch 455/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2449
Epoch 456/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2446
Epoch 457/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2415
Epoch 458/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2632
Epoch 459/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2482
```

```
Epoch 460/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2510
Epoch 461/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2724
Epoch 462/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2449
Epoch 463/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2412
Epoch 464/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2489
Epoch 465/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2639
Epoch 466/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2645
Epoch 467/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2593
Epoch 468/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2595
Epoch 469/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2420
Epoch 470/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2476
Epoch 471/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2581
Epoch 472/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2723
Epoch 473/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2463
Epoch 474/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2636
Epoch 475/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2706
Epoch 476/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2639
Epoch 477/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2649
Epoch 478/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2576
Epoch 479/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2567
Epoch 480/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2588
Epoch 481/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2483
Epoch 482/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2583
Epoch 483/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2554
Epoch 484/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2654
Epoch 485/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2439
Epoch 486/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2493
Epoch 487/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2533
Epoch 488/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2598
Epoch 489/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2477
```

```
Epoch 490/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2719
Epoch 491/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2714
Epoch 492/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2584
Epoch 493/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2579
Epoch 494/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2618
Epoch 495/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2487
Epoch 496/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2723
Epoch 497/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2490
Epoch 498/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2431
Epoch 499/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2420
Epoch 500/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2581
Epoch 501/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2519
Epoch 502/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2503
Epoch 503/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2648
Epoch 504/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2556
Epoch 505/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2459
Epoch 506/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2536
Epoch 507/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2500
Epoch 508/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2386
Epoch 509/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2527
Epoch 510/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2379
Epoch 511/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2439
Epoch 512/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2661
Epoch 513/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2529
Epoch 514/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2642
Epoch 515/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2663
Epoch 516/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2547
Epoch 517/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2517
Epoch 518/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2491
Epoch 519/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2533
```

```
Epoch 520/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2447
Epoch 521/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2514
Epoch 522/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2638
Epoch 523/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2661
Epoch 524/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2607
Epoch 525/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2630
Epoch 526/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2479
Epoch 527/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2514
Epoch 528/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2619
Epoch 529/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2678
Epoch 530/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2620
Epoch 531/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2568
Epoch 532/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2400
Epoch 533/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2413
Epoch 534/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2597
Epoch 535/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2458
Epoch 536/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2538
Epoch 537/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2645
Epoch 538/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2437
Epoch 539/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2365
Epoch 540/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2596
Epoch 541/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2689
Epoch 542/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2697
Epoch 543/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2647
Epoch 544/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2569
Epoch 545/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2539
Epoch 546/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2749
Epoch 547/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2638
Epoch 548/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2566
Epoch 549/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2417
```

```
Epoch 550/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2408
Epoch 551/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2461
Epoch 552/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2539
Epoch 553/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2476
Epoch 554/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2473
Epoch 555/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2518
Epoch 556/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2386
Epoch 557/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2452
Epoch 558/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2559
Epoch 559/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2824
Epoch 560/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2555
Epoch 561/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2526
Epoch 562/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2620
Epoch 563/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2415
Epoch 564/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2511
Epoch 565/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2449
Epoch 566/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2453
Epoch 567/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2569
Epoch 568/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2443
Epoch 569/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2455
Epoch 570/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2389
Epoch 571/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2545
Epoch 572/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2477
Epoch 573/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2451
Epoch 574/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2526
Epoch 575/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2433
Epoch 576/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2446
Epoch 577/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2535
Epoch 578/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2657
Epoch 579/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2444
```



```
Epoch 580/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2384
Epoch 581/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2505
Epoch 582/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2561
Epoch 583/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2381
Epoch 584/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2546
Epoch 585/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2423
Epoch 586/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2382
Epoch 587/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2408
Epoch 588/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2415
Epoch 589/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2336
Epoch 590/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2408
Epoch 591/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2538
Epoch 592/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2439
Epoch 593/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2433
Epoch 594/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2375
Epoch 595/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2893
Epoch 596/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2783
Epoch 597/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2732
Epoch 598/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2612
Epoch 599/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2565
Epoch 600/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2540
Epoch 601/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2444
Epoch 602/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2566
Epoch 603/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2735
Epoch 604/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2771
Epoch 605/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2591
Epoch 606/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2487
Epoch 607/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2488
Epoch 608/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2632
Epoch 609/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2576
```

```
Epoch 610/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2526
Epoch 611/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2686
Epoch 612/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2625
Epoch 613/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2601
Epoch 614/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2495
Epoch 615/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2456
Epoch 616/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2436
Epoch 617/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2432
Epoch 618/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2451
Epoch 619/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2429
Epoch 620/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2454
Epoch 621/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2570
Epoch 622/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2453
Epoch 623/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2567
Epoch 624/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2445
Epoch 625/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2452
Epoch 626/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2539
Epoch 627/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2397
Epoch 628/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2476
Epoch 629/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2433
Epoch 630/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2427
Epoch 631/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2485
Epoch 632/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2558
Epoch 633/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2445
Epoch 634/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2442
Epoch 635/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2508
Epoch 636/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2489
Epoch 637/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2474
Epoch 638/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2453
Epoch 639/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2385
```

```
Epoch 640/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2491
Epoch 641/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2383
Epoch 642/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2475
Epoch 643/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2577
Epoch 644/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2430
Epoch 645/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2658
Epoch 646/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2497
Epoch 647/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2530
Epoch 648/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2412
Epoch 649/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2423
Epoch 650/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2647
Epoch 651/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2476
Epoch 652/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2382
Epoch 653/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2361
Epoch 654/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2519
Epoch 655/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2418
Epoch 656/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2361
Epoch 657/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2406
Epoch 658/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2445
Epoch 659/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2416
Epoch 660/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2473
Epoch 661/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2338
Epoch 662/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2507
Epoch 663/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2472
Epoch 664/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2731
Epoch 665/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2428
Epoch 666/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2530
Epoch 667/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2339
Epoch 668/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2363
Epoch 669/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2506
```

```
Epoch 670/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2341
Epoch 671/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2473
Epoch 672/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2575
Epoch 673/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2443
Epoch 674/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2478
Epoch 675/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2549
Epoch 676/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2411
Epoch 677/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2372
Epoch 678/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2352
Epoch 679/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2452
Epoch 680/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2569
Epoch 681/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2551
Epoch 682/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2467
Epoch 683/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2451
Epoch 684/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2322
Epoch 685/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2483
Epoch 686/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2514
Epoch 687/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2542
Epoch 688/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2439
Epoch 689/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2457
Epoch 690/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2431
Epoch 691/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2445
Epoch 692/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2369
Epoch 693/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2380
Epoch 694/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2448
Epoch 695/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2401
Epoch 696/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2340
Epoch 697/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2438
Epoch 698/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2458
Epoch 699/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2424
```

```
Epoch 700/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2485
Epoch 701/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2384
Epoch 702/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2313
Epoch 703/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2478
Epoch 704/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2469
Epoch 705/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2490
Epoch 706/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2400
Epoch 707/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2381
Epoch 708/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2530
Epoch 709/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2634
Epoch 710/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2565
Epoch 711/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2556
Epoch 712/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2734
Epoch 713/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2500
Epoch 714/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2349
Epoch 715/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2299
Epoch 716/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2350
Epoch 717/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2479
Epoch 718/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2427
Epoch 719/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2460
Epoch 720/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2416
Epoch 721/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2444
Epoch 722/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2364
Epoch 723/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2479
Epoch 724/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2427
Epoch 725/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2561
Epoch 726/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2378
Epoch 727/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2493
Epoch 728/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2599
Epoch 729/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2357
```

```
Epoch 730/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2365
Epoch 731/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2495
Epoch 732/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2417
Epoch 733/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2499
Epoch 734/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2507
Epoch 735/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2514
Epoch 736/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2444
Epoch 737/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2427
Epoch 738/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2372
Epoch 739/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2581
Epoch 740/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2574
Epoch 741/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2704
Epoch 742/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2418
Epoch 743/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2357
Epoch 744/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2378
Epoch 745/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2466
Epoch 746/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2579
Epoch 747/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2423
Epoch 748/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2492
Epoch 749/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2496
Epoch 750/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2463
Epoch 751/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2407
Epoch 752/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2579
Epoch 753/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2324
Epoch 754/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2431
Epoch 755/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2338
Epoch 756/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2493
Epoch 757/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2509
Epoch 758/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2399
Epoch 759/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2389
```

```
Epoch 760/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2499
Epoch 761/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2589
Epoch 762/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2474
Epoch 763/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2375
Epoch 764/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2566
Epoch 765/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2534
Epoch 766/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2511
Epoch 767/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2469
Epoch 768/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2406
Epoch 769/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2354
Epoch 770/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2360
Epoch 771/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2458
Epoch 772/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2347
Epoch 773/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2430
Epoch 774/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2464
Epoch 775/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2493
Epoch 776/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2598
Epoch 777/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2300
Epoch 778/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2381
Epoch 779/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2557
Epoch 780/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2592
Epoch 781/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2630
Epoch 782/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2378
Epoch 783/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2379
Epoch 784/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2368
Epoch 785/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2374
Epoch 786/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2494
Epoch 787/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2523
Epoch 788/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2554
Epoch 789/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2339
```

```
Epoch 790/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2406
Epoch 791/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2572
Epoch 792/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2454
Epoch 793/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2368
Epoch 794/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2634
Epoch 795/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2241
Epoch 796/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2530
Epoch 797/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2461
Epoch 798/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2603
Epoch 799/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2350
Epoch 800/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2314
Epoch 801/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2387
Epoch 802/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2362
Epoch 803/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2341
Epoch 804/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2395
Epoch 805/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2450
Epoch 806/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2384
Epoch 807/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2564
Epoch 808/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2552
Epoch 809/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2464
Epoch 810/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2354
Epoch 811/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2342
Epoch 812/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2291
Epoch 813/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2406
Epoch 814/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2484
Epoch 815/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2324
Epoch 816/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2340
Epoch 817/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2508
Epoch 818/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2457
Epoch 819/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2720
```



```
Epoch 820/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2767
Epoch 821/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2510
Epoch 822/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2448
Epoch 823/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2416
Epoch 824/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2470
Epoch 825/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2373
Epoch 826/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2348
Epoch 827/1000
13/13 [=====] - 0s 4ms/step - loss: 0.2420
Epoch 828/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2449
Epoch 829/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2478
Epoch 830/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2432
Epoch 831/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2412
Epoch 832/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2448
Epoch 833/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2564
Epoch 834/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2382
Epoch 835/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2390
Epoch 836/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2307
Epoch 837/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2394
Epoch 838/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2353
Epoch 839/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2351
Epoch 840/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2360
Epoch 841/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2359
Epoch 842/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2510
Epoch 843/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2472
Epoch 844/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2303
Epoch 845/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2363
Epoch 846/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2370
Epoch 847/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2543
Epoch 848/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2406
Epoch 849/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2319
```

```
Epoch 850/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2384
Epoch 851/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2397
Epoch 852/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2514
Epoch 853/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2372
Epoch 854/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2439
Epoch 855/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2444
Epoch 856/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2283
Epoch 857/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2437
Epoch 858/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2404
Epoch 859/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2697
Epoch 860/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2366
Epoch 861/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2445
Epoch 862/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2368
Epoch 863/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2372
Epoch 864/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2692
Epoch 865/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2367
Epoch 866/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2463
Epoch 867/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2522
Epoch 868/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2351
Epoch 869/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2390
Epoch 870/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2502
Epoch 871/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2386
Epoch 872/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2311
Epoch 873/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2266
Epoch 874/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2392
Epoch 875/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2337
Epoch 876/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2427
Epoch 877/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2505
Epoch 878/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2514
Epoch 879/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2443
```

```
Epoch 880/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2394
Epoch 881/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2765
Epoch 882/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2452
Epoch 883/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2665
Epoch 884/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2367
Epoch 885/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2453
Epoch 886/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2362
Epoch 887/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2390
Epoch 888/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2429
Epoch 889/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2341
Epoch 890/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2389
Epoch 891/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2510
Epoch 892/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2320
Epoch 893/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2469
Epoch 894/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2427
Epoch 895/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2635
Epoch 896/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2589
Epoch 897/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2601
Epoch 898/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2587
Epoch 899/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2558
Epoch 900/1000
13/13 [=====] - 0s 6ms/step - loss: 0.2458
Epoch 901/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2394
Epoch 902/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2587
Epoch 903/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2372
Epoch 904/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2349
Epoch 905/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2342
Epoch 906/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2433
Epoch 907/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2519
Epoch 908/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2421
Epoch 909/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2301
```

```
Epoch 910/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2353
Epoch 911/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2403
Epoch 912/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2317
Epoch 913/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2366
Epoch 914/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2443
Epoch 915/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2356
Epoch 916/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2376
Epoch 917/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2365
Epoch 918/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2364
Epoch 919/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2632
Epoch 920/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2431
Epoch 921/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2413
Epoch 922/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2578
Epoch 923/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2411
Epoch 924/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2492
Epoch 925/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2297
Epoch 926/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2429
Epoch 927/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2353
Epoch 928/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2302
Epoch 929/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2307
Epoch 930/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2397
Epoch 931/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2541
Epoch 932/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2461
Epoch 933/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2444
Epoch 934/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2425
Epoch 935/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2307
Epoch 936/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2249
Epoch 937/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2313
Epoch 938/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2504
Epoch 939/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2505
```

```
Epoch 940/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2484
Epoch 941/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2388
Epoch 942/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2351
Epoch 943/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2518
Epoch 944/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2478
Epoch 945/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2583
Epoch 946/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2337
Epoch 947/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2416
Epoch 948/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2576
Epoch 949/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2401
Epoch 950/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2329
Epoch 951/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2339
Epoch 952/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2727
Epoch 953/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2558
Epoch 954/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2536
Epoch 955/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2369
Epoch 956/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2393
Epoch 957/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2409
Epoch 958/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2557
Epoch 959/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2294
Epoch 960/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2343
Epoch 961/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2331
Epoch 962/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2296
Epoch 963/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2496
Epoch 964/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2425
Epoch 965/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2463
Epoch 966/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2639
Epoch 967/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2468
Epoch 968/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2518
Epoch 969/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2581
```

```
Epoch 970/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2345
Epoch 971/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2311
Epoch 972/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2374
Epoch 973/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2309
Epoch 974/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2292
Epoch 975/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2421
Epoch 976/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2522
Epoch 977/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2372
Epoch 978/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2281
Epoch 979/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2384
Epoch 980/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2277
Epoch 981/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2286
Epoch 982/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2311
Epoch 983/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2367
Epoch 984/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2247
Epoch 985/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2355
Epoch 986/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2368
Epoch 987/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2301
Epoch 988/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2313
Epoch 989/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2609
Epoch 990/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2478
Epoch 991/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2434
Epoch 992/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2371
Epoch 993/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2387
Epoch 994/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2429
Epoch 995/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2484
Epoch 996/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2628
Epoch 997/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2624
Epoch 998/1000
13/13 [=====] - 0s 3ms/step - loss: 0.2696
Epoch 999/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2671
```

```
Epoch 1000/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2577
Finished lambda = 0.01
Epoch 1/1000
13/13 [=====] - 0s 1ms/step - loss: 2.9989
Epoch 2/1000
13/13 [=====] - 0s 1ms/step - loss: 1.3245
Epoch 3/1000
13/13 [=====] - 0s 2ms/step - loss: 1.0224
Epoch 4/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8538
Epoch 5/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7891
Epoch 6/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7551
Epoch 7/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7403
Epoch 8/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7004
Epoch 9/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6540
Epoch 10/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6198
Epoch 11/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6089
Epoch 12/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6148
Epoch 13/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6205
Epoch 14/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6220
Epoch 15/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5715
Epoch 16/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6220
Epoch 17/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5795
Epoch 18/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5735
Epoch 19/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5571
Epoch 20/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5211
Epoch 21/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5341
Epoch 22/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5359
Epoch 23/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5342
Epoch 24/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5281
Epoch 25/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5602
Epoch 26/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6074
Epoch 27/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5049
Epoch 28/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4914
Epoch 29/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.4839
Epoch 30/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5050
Epoch 31/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5163
Epoch 32/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5109
Epoch 33/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5017
Epoch 34/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5107
Epoch 35/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5062
Epoch 36/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4991
Epoch 37/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4738
Epoch 38/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4702
Epoch 39/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4691
Epoch 40/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4610
Epoch 41/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4838
Epoch 42/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4870
Epoch 43/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4829
Epoch 44/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4662
Epoch 45/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4696
Epoch 46/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4509
Epoch 47/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4348
Epoch 48/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4887
Epoch 49/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4704
Epoch 50/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4378
Epoch 51/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4515
Epoch 52/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4386
Epoch 53/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4538
Epoch 54/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4313
Epoch 55/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4561
Epoch 56/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4269
Epoch 57/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4404
Epoch 58/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4246
Epoch 59/1000
```



```
13/13 [=====] - 0s 1ms/step - loss: 0.4513
Epoch 60/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4801
Epoch 61/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4617
Epoch 62/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4432
Epoch 63/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4244
Epoch 64/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4472
Epoch 65/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4260
Epoch 66/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4328
Epoch 67/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4285
Epoch 68/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4384
Epoch 69/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4236
Epoch 70/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4223
Epoch 71/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4111
Epoch 72/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4044
Epoch 73/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4145
Epoch 74/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4331
Epoch 75/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4173
Epoch 76/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4125
Epoch 77/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4054
Epoch 78/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4251
Epoch 79/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4508
Epoch 80/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4188
Epoch 81/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4304
Epoch 82/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4082
Epoch 83/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3962
Epoch 84/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3844
Epoch 85/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4121
Epoch 86/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4003
Epoch 87/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4254
Epoch 88/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4058
Epoch 89/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3976
Epoch 90/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3826
Epoch 91/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4087
Epoch 92/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3975
Epoch 93/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3852
Epoch 94/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3781
Epoch 95/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3921
Epoch 96/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3738
Epoch 97/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3867
Epoch 98/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3899
Epoch 99/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4193
Epoch 100/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4051
Epoch 101/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3988
Epoch 102/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3859
Epoch 103/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3982
Epoch 104/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3842
Epoch 105/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4086
Epoch 106/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3639
Epoch 107/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3974
Epoch 108/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4183
Epoch 109/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3905
Epoch 110/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3813
Epoch 111/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3820
Epoch 112/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3796
Epoch 113/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3682
Epoch 114/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3657
Epoch 115/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3633
Epoch 116/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3734
Epoch 117/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3882
Epoch 118/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3783
Epoch 119/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3852
Epoch 120/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4101
Epoch 121/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4519
Epoch 122/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3982
Epoch 123/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3898
Epoch 124/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3756
Epoch 125/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3645
Epoch 126/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3680
Epoch 127/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3836
Epoch 128/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3712
Epoch 129/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3798
Epoch 130/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3741
Epoch 131/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3787
Epoch 132/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3596
Epoch 133/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3594
Epoch 134/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3779
Epoch 135/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3807
Epoch 136/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3908
Epoch 137/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3658
Epoch 138/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3687
Epoch 139/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3920
Epoch 140/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3824
Epoch 141/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3593
Epoch 142/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3511
Epoch 143/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3627
Epoch 144/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3676
Epoch 145/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3568
Epoch 146/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3569
Epoch 147/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3861
Epoch 148/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3661
Epoch 149/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.3602
Epoch 150/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3580
Epoch 151/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3560
Epoch 152/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3480
Epoch 153/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3709
Epoch 154/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3521
Epoch 155/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3550
Epoch 156/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3584
Epoch 157/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3504
Epoch 158/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3557
Epoch 159/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3453
Epoch 160/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3629
Epoch 161/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3693
Epoch 162/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3520
Epoch 163/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3570
Epoch 164/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3615
Epoch 165/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3867
Epoch 166/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4053
Epoch 167/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4109
Epoch 168/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3667
Epoch 169/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3587
Epoch 170/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3763
Epoch 171/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3643
Epoch 172/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3522
Epoch 173/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3797
Epoch 174/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3899
Epoch 175/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3793
Epoch 176/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3791
Epoch 177/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3593
Epoch 178/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3455
Epoch 179/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3545
Epoch 180/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3442
Epoch 181/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3647
Epoch 182/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3537
Epoch 183/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3442
Epoch 184/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3407
Epoch 185/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3435
Epoch 186/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3451
Epoch 187/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3556
Epoch 188/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3531
Epoch 189/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3399
Epoch 190/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3385
Epoch 191/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3523
Epoch 192/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3500
Epoch 193/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3631
Epoch 194/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3534
Epoch 195/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3356
Epoch 196/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3396
Epoch 197/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3692
Epoch 198/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3465
Epoch 199/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3471
Epoch 200/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3461
Epoch 201/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3577
Epoch 202/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3358
Epoch 203/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3352
Epoch 204/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3509
Epoch 205/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3855
Epoch 206/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3548
Epoch 207/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3509
Epoch 208/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3493
Epoch 209/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3668
Epoch 210/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3523
Epoch 211/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3587
Epoch 212/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3602
Epoch 213/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3478
Epoch 214/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3444
Epoch 215/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3396
Epoch 216/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3475
Epoch 217/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3346
Epoch 218/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3478
Epoch 219/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3338
Epoch 220/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3354
Epoch 221/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3313
Epoch 222/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3468
Epoch 223/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3410
Epoch 224/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3663
Epoch 225/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3570
Epoch 226/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3420
Epoch 227/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3493
Epoch 228/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3291
Epoch 229/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3469
Epoch 230/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3442
Epoch 231/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3505
Epoch 232/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3531
Epoch 233/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3332
Epoch 234/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3342
Epoch 235/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3313
Epoch 236/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3387
Epoch 237/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3351
Epoch 238/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3553
Epoch 239/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3438
Epoch 240/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3269
Epoch 241/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3303
Epoch 242/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3327
Epoch 243/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3321
Epoch 244/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3417
Epoch 245/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3379
Epoch 246/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3369
Epoch 247/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3276
Epoch 248/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3447
Epoch 249/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3527
Epoch 250/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3378
Epoch 251/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3666
Epoch 252/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3369
Epoch 253/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3376
Epoch 254/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3588
Epoch 255/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3419
Epoch 256/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3300
Epoch 257/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3419
Epoch 258/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3399
Epoch 259/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3367
Epoch 260/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3398
Epoch 261/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3594
Epoch 262/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3728
Epoch 263/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3458
Epoch 264/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3259
Epoch 265/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3452
Epoch 266/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3671
Epoch 267/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3698
Epoch 268/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3403
Epoch 269/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3309
Epoch 270/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3420
Epoch 271/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3282
Epoch 272/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3309
Epoch 273/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3367
Epoch 274/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3207
Epoch 275/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3432
Epoch 276/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3287
Epoch 277/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3270
Epoch 278/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3282
Epoch 279/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3381
Epoch 280/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3388
Epoch 281/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3251
Epoch 282/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3287
Epoch 283/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3296
Epoch 284/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3324
Epoch 285/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3520
Epoch 286/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3312
Epoch 287/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3507
Epoch 288/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3431
Epoch 289/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3329
Epoch 290/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3488
Epoch 291/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3308
Epoch 292/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3231
Epoch 293/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3315
Epoch 294/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3494
Epoch 295/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3429
Epoch 296/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3256
Epoch 297/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3229
Epoch 298/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3442
Epoch 299/1000
```



```
13/13 [=====] - 0s 1ms/step - loss: 0.3397
Epoch 300/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3746
Epoch 301/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3371
Epoch 302/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3251
Epoch 303/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3240
Epoch 304/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3284
Epoch 305/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3399
Epoch 306/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3303
Epoch 307/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3339
Epoch 308/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3403
Epoch 309/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3206
Epoch 310/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3299
Epoch 311/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3127
Epoch 312/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3158
Epoch 313/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3448
Epoch 314/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3311
Epoch 315/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3345
Epoch 316/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3424
Epoch 317/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3206
Epoch 318/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3218
Epoch 319/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3294
Epoch 320/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3197
Epoch 321/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3209
Epoch 322/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3174
Epoch 323/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3358
Epoch 324/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3404
Epoch 325/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3436
Epoch 326/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3203
Epoch 327/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3174
Epoch 328/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3333
Epoch 329/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3251
Epoch 330/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3100
Epoch 331/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3141
Epoch 332/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3202
Epoch 333/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3459
Epoch 334/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3325
Epoch 335/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3230
Epoch 336/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3336
Epoch 337/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3436
Epoch 338/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3188
Epoch 339/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3144
Epoch 340/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3343
Epoch 341/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3287
Epoch 342/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3408
Epoch 343/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3243
Epoch 344/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3196
Epoch 345/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3196
Epoch 346/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3288
Epoch 347/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3271
Epoch 348/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3338
Epoch 349/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3095
Epoch 350/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3318
Epoch 351/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3170
Epoch 352/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3366
Epoch 353/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3240
Epoch 354/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3225
Epoch 355/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3282
Epoch 356/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3142
Epoch 357/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3287
Epoch 358/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3437
Epoch 359/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3181
Epoch 360/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3251
Epoch 361/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3434
Epoch 362/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3861
Epoch 363/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3579
Epoch 364/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3261
Epoch 365/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3231
Epoch 366/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3174
Epoch 367/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3326
Epoch 368/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3578
Epoch 369/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3644
Epoch 370/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3321
Epoch 371/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3190
Epoch 372/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3196
Epoch 373/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3332
Epoch 374/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3132
Epoch 375/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3334
Epoch 376/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3179
Epoch 377/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3091
Epoch 378/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3238
Epoch 379/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3204
Epoch 380/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3179
Epoch 381/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3300
Epoch 382/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3142
Epoch 383/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3262
Epoch 384/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3242
Epoch 385/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3193
Epoch 386/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3092
Epoch 387/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3252
Epoch 388/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3324
Epoch 389/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.3191
Epoch 390/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3083
Epoch 391/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3270
Epoch 392/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3361
Epoch 393/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3074
Epoch 394/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3159
Epoch 395/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3336
Epoch 396/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3207
Epoch 397/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3469
Epoch 398/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3230
Epoch 399/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3130
Epoch 400/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3155
Epoch 401/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3131
Epoch 402/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3104
Epoch 403/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3127
Epoch 404/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3174
Epoch 405/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3144
Epoch 406/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3180
Epoch 407/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3140
Epoch 408/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3130
Epoch 409/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3334
Epoch 410/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3096
Epoch 411/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3463
Epoch 412/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3316
Epoch 413/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3076
Epoch 414/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3187
Epoch 415/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3179
Epoch 416/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3418
Epoch 417/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3325
Epoch 418/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3083
Epoch 419/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3186
Epoch 420/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3049
Epoch 421/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3550
Epoch 422/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3396
Epoch 423/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3193
Epoch 424/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3134
Epoch 425/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3231
Epoch 426/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3129
Epoch 427/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3113
Epoch 428/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3166
Epoch 429/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3166
Epoch 430/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3071
Epoch 431/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3060
Epoch 432/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3089
Epoch 433/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3361
Epoch 434/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3475
Epoch 435/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3269
Epoch 436/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3396
Epoch 437/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3347
Epoch 438/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3276
Epoch 439/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3123
Epoch 440/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3068
Epoch 441/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3132
Epoch 442/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3207
Epoch 443/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3150
Epoch 444/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3084
Epoch 445/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3187
Epoch 446/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3150
Epoch 447/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3420
Epoch 448/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3285
Epoch 449/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3072
Epoch 450/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3082
Epoch 451/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3089
Epoch 452/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3268
Epoch 453/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3210
Epoch 454/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3088
Epoch 455/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3119
Epoch 456/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3088
Epoch 457/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3018
Epoch 458/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3272
Epoch 459/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3184
Epoch 460/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3254
Epoch 461/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3249
Epoch 462/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3207
Epoch 463/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3171
Epoch 464/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3167
Epoch 465/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3318
Epoch 466/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3471
Epoch 467/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3450
Epoch 468/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3471
Epoch 469/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3053
Epoch 470/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3110
Epoch 471/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3208
Epoch 472/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3250
Epoch 473/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3150
Epoch 474/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3240
Epoch 475/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3166
Epoch 476/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3139
Epoch 477/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3489
Epoch 478/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3178
Epoch 479/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3077
Epoch 480/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3141
Epoch 481/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3045
Epoch 482/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3233
Epoch 483/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3136
Epoch 484/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3187
Epoch 485/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3123
Epoch 486/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3043
Epoch 487/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3024
Epoch 488/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3213
Epoch 489/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3022
Epoch 490/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3187
Epoch 491/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3307
Epoch 492/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3129
Epoch 493/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3057
Epoch 494/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3158
Epoch 495/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3037
Epoch 496/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3250
Epoch 497/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3254
Epoch 498/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2986
Epoch 499/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3035
Epoch 500/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3261
Epoch 501/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3239
Epoch 502/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3199
Epoch 503/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3316
Epoch 504/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3151
Epoch 505/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3038
Epoch 506/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3155
Epoch 507/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3106
Epoch 508/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2982
Epoch 509/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3031
Epoch 510/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3018
Epoch 511/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3072
Epoch 512/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3279
Epoch 513/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3041
Epoch 514/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3149
Epoch 515/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3020
Epoch 516/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3117
Epoch 517/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3089
Epoch 518/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3224
Epoch 519/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3252
Epoch 520/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2972
Epoch 521/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3049
Epoch 522/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3265
Epoch 523/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3286
Epoch 524/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3050
Epoch 525/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3116
Epoch 526/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3050
Epoch 527/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3097
Epoch 528/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3137
Epoch 529/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3496
Epoch 530/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3243
Epoch 531/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3262
Epoch 532/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3106
Epoch 533/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3022
Epoch 534/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3266
Epoch 535/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3201
Epoch 536/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3133
Epoch 537/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3616
Epoch 538/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3225
Epoch 539/1000
```



```
13/13 [=====] - 0s 1ms/step - loss: 0.2955
Epoch 540/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3166
Epoch 541/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3299
Epoch 542/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3353
Epoch 543/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3268
Epoch 544/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3174
Epoch 545/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3046
Epoch 546/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3184
Epoch 547/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3342
Epoch 548/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3106
Epoch 549/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2950
Epoch 550/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3041
Epoch 551/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2973
Epoch 552/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3104
Epoch 553/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2923
Epoch 554/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3141
Epoch 555/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3511
Epoch 556/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3378
Epoch 557/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3211
Epoch 558/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3095
Epoch 559/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3238
Epoch 560/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3082
Epoch 561/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2941
Epoch 562/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3086
Epoch 563/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3234
Epoch 564/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3305
Epoch 565/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3106
Epoch 566/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3067
Epoch 567/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3112
Epoch 568/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3047
Epoch 569/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3067
Epoch 570/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2994
Epoch 571/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3161
Epoch 572/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2992
Epoch 573/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3021
Epoch 574/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3064
Epoch 575/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2949
Epoch 576/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2957
Epoch 577/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3207
Epoch 578/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3433
Epoch 579/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2999
Epoch 580/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3075
Epoch 581/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3240
Epoch 582/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3076
Epoch 583/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3135
Epoch 584/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3046
Epoch 585/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3233
Epoch 586/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3025
Epoch 587/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3003
Epoch 588/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2984
Epoch 589/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2949
Epoch 590/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2949
Epoch 591/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3090
Epoch 592/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3059
Epoch 593/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2993
Epoch 594/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3019
Epoch 595/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4068
Epoch 596/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3874
Epoch 597/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3456
Epoch 598/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3150
Epoch 599/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3181
Epoch 600/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3134
Epoch 601/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3002
Epoch 602/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2995
Epoch 603/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3384
Epoch 604/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3247
Epoch 605/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3339
Epoch 606/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3155
Epoch 607/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2950
Epoch 608/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3054
Epoch 609/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3201
Epoch 610/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3148
Epoch 611/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3247
Epoch 612/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3458
Epoch 613/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3359
Epoch 614/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3256
Epoch 615/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3214
Epoch 616/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2985
Epoch 617/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2937
Epoch 618/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3192
Epoch 619/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3038
Epoch 620/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3036
Epoch 621/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3152
Epoch 622/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3113
Epoch 623/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3092
Epoch 624/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2982
Epoch 625/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2889
Epoch 626/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3036
Epoch 627/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3151
Epoch 628/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3188
Epoch 629/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.3066
Epoch 630/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3021
Epoch 631/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3127
Epoch 632/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3291
Epoch 633/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3358
Epoch 634/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3058
Epoch 635/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3295
Epoch 636/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3149
Epoch 637/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3122
Epoch 638/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2980
Epoch 639/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2968
Epoch 640/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2987
Epoch 641/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2922
Epoch 642/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3096
Epoch 643/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3172
Epoch 644/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2931
Epoch 645/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3165
Epoch 646/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3285
Epoch 647/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3381
Epoch 648/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3090
Epoch 649/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3119
Epoch 650/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3034
Epoch 651/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2955
Epoch 652/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2959
Epoch 653/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3130
Epoch 654/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3184
Epoch 655/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2987
Epoch 656/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2935
Epoch 657/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3072
Epoch 658/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3140
Epoch 659/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3281
Epoch 660/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3352
Epoch 661/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3064
Epoch 662/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3209
Epoch 663/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3229
Epoch 664/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3067
Epoch 665/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3027
Epoch 666/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3019
Epoch 667/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2940
Epoch 668/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2971
Epoch 669/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3282
Epoch 670/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3137
Epoch 671/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3120
Epoch 672/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3242
Epoch 673/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3274
Epoch 674/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3113
Epoch 675/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3084
Epoch 676/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2920
Epoch 677/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2943
Epoch 678/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2932
Epoch 679/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3008
Epoch 680/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3128
Epoch 681/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3194
Epoch 682/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3019
Epoch 683/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3008
Epoch 684/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3025
Epoch 685/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2992
Epoch 686/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2948
Epoch 687/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3193
Epoch 688/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3114
Epoch 689/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3585
Epoch 690/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3059
Epoch 691/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3024
Epoch 692/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2984
Epoch 693/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3043
Epoch 694/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3071
Epoch 695/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2984
Epoch 696/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3001
Epoch 697/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2993
Epoch 698/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3133
Epoch 699/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2985
Epoch 700/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3052
Epoch 701/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2890
Epoch 702/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2933
Epoch 703/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2984
Epoch 704/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3166
Epoch 705/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3051
Epoch 706/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2948
Epoch 707/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2992
Epoch 708/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3182
Epoch 709/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3096
Epoch 710/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3241
Epoch 711/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3111
Epoch 712/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3250
Epoch 713/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3175
Epoch 714/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2916
Epoch 715/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2852
Epoch 716/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2932
Epoch 717/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3084
Epoch 718/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3184
Epoch 719/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3265
Epoch 720/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3143
Epoch 721/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3002
Epoch 722/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2953
Epoch 723/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3121
Epoch 724/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2932
Epoch 725/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3040
Epoch 726/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3012
Epoch 727/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3055
Epoch 728/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3141
Epoch 729/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3420
Epoch 730/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3097
Epoch 731/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3174
Epoch 732/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3003
Epoch 733/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3088
Epoch 734/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3287
Epoch 735/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3189
Epoch 736/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3194
Epoch 737/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3398
Epoch 738/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2933
Epoch 739/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3053
Epoch 740/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3120
Epoch 741/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3256
Epoch 742/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3453
Epoch 743/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3008
Epoch 744/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2948
Epoch 745/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2987
Epoch 746/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3001
Epoch 747/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2937
Epoch 748/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3119
Epoch 749/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3254
Epoch 750/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3044
Epoch 751/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3106
Epoch 752/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3201
Epoch 753/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3004
Epoch 754/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2892
Epoch 755/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3002
Epoch 756/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3132
Epoch 757/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3076
Epoch 758/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2983
Epoch 759/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2919
Epoch 760/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3098
Epoch 761/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3199
Epoch 762/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3086
Epoch 763/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2986
Epoch 764/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3111
Epoch 765/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3042
Epoch 766/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3090
Epoch 767/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2992
Epoch 768/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3120
Epoch 769/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2884
Epoch 770/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2865
Epoch 771/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2993
Epoch 772/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2961
Epoch 773/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3230
Epoch 774/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3053
Epoch 775/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3106
Epoch 776/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3464
Epoch 777/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3252
Epoch 778/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3014
Epoch 779/1000
```



```
13/13 [=====] - 0s 1ms/step - loss: 0.3252
Epoch 780/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3326
Epoch 781/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2959
Epoch 782/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2919
Epoch 783/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2946
Epoch 784/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2950
Epoch 785/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2871
Epoch 786/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3006
Epoch 787/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2998
Epoch 788/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3195
Epoch 789/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3085
Epoch 790/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2974
Epoch 791/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3230
Epoch 792/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3292
Epoch 793/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3264
Epoch 794/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3151
Epoch 795/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2877
Epoch 796/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3257
Epoch 797/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3014
Epoch 798/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3334
Epoch 799/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3190
Epoch 800/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2907
Epoch 801/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2892
Epoch 802/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2929
Epoch 803/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2940
Epoch 804/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2864
Epoch 805/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3050
Epoch 806/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3025
Epoch 807/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2957
Epoch 808/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3337
Epoch 809/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3226
Epoch 810/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3029
Epoch 811/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3051
Epoch 812/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2860
Epoch 813/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2925
Epoch 814/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3028
Epoch 815/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2892
Epoch 816/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2975
Epoch 817/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3100
Epoch 818/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3011
Epoch 819/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3045
Epoch 820/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3618
Epoch 821/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3155
Epoch 822/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3099
Epoch 823/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3029
Epoch 824/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2995
Epoch 825/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3145
Epoch 826/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3002
Epoch 827/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2885
Epoch 828/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3048
Epoch 829/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3252
Epoch 830/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3555
Epoch 831/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3051
Epoch 832/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3184
Epoch 833/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3214
Epoch 834/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2966
Epoch 835/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2978
Epoch 836/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2891
Epoch 837/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3035
Epoch 838/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3077
Epoch 839/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.2967
Epoch 840/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3003
Epoch 841/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2889
Epoch 842/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3086
Epoch 843/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3084
Epoch 844/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2893
Epoch 845/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2893
Epoch 846/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2906
Epoch 847/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3094
Epoch 848/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3059
Epoch 849/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2781
Epoch 850/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2948
Epoch 851/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2925
Epoch 852/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3139
Epoch 853/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3141
Epoch 854/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2982
Epoch 855/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2900
Epoch 856/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2896
Epoch 857/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3019
Epoch 858/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3103
Epoch 859/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3117
Epoch 860/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2940
Epoch 861/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3180
Epoch 862/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3260
Epoch 863/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2953
Epoch 864/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3448
Epoch 865/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3310
Epoch 866/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3433
Epoch 867/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3046
Epoch 868/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3109
Epoch 869/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3041
Epoch 870/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3194
Epoch 871/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3140
Epoch 872/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2967
Epoch 873/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2924
Epoch 874/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3038
Epoch 875/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2968
Epoch 876/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3031
Epoch 877/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3072
Epoch 878/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3250
Epoch 879/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3205
Epoch 880/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3113
Epoch 881/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3296
Epoch 882/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3178
Epoch 883/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3439
Epoch 884/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3028
Epoch 885/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3207
Epoch 886/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2982
Epoch 887/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2863
Epoch 888/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3038
Epoch 889/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3010
Epoch 890/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3126
Epoch 891/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3124
Epoch 892/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3029
Epoch 893/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3210
Epoch 894/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3203
Epoch 895/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3178
Epoch 896/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3095
Epoch 897/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3167
Epoch 898/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3139
Epoch 899/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3385
Epoch 900/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3065
Epoch 901/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2921
Epoch 902/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3024
Epoch 903/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2910
Epoch 904/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2849
Epoch 905/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2933
Epoch 906/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3120
Epoch 907/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3070
Epoch 908/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2967
Epoch 909/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3133
Epoch 910/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3030
Epoch 911/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3014
Epoch 912/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2929
Epoch 913/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2885
Epoch 914/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3140
Epoch 915/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3089
Epoch 916/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2933
Epoch 917/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2990
Epoch 918/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2961
Epoch 919/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3278
Epoch 920/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3220
Epoch 921/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3189
Epoch 922/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3258
Epoch 923/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3025
Epoch 924/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3068
Epoch 925/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3016
Epoch 926/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2959
Epoch 927/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3106
Epoch 928/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3037
Epoch 929/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.2941
Epoch 930/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3001
Epoch 931/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3350
Epoch 932/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3131
Epoch 933/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3115
Epoch 934/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3268
Epoch 935/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2969
Epoch 936/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2871
Epoch 937/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2966
Epoch 938/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3051
Epoch 939/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3040
Epoch 940/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2998
Epoch 941/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2866
Epoch 942/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2800
Epoch 943/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3129
Epoch 944/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3250
Epoch 945/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3018
Epoch 946/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2906
Epoch 947/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2924
Epoch 948/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2971
Epoch 949/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2913
Epoch 950/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2937
Epoch 951/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2823
Epoch 952/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3256
Epoch 953/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3062
Epoch 954/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3578
Epoch 955/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3073
Epoch 956/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2936
Epoch 957/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2927
Epoch 958/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3055
Epoch 959/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.2892
Epoch 960/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2895
Epoch 961/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2938
Epoch 962/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2924
Epoch 963/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3092
Epoch 964/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2947
Epoch 965/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2859
Epoch 966/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3015
Epoch 967/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2967
Epoch 968/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3078
Epoch 969/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3155
Epoch 970/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3145
Epoch 971/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2888
Epoch 972/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2897
Epoch 973/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2947
Epoch 974/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2833
Epoch 975/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2943
Epoch 976/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3060
Epoch 977/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2933
Epoch 978/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2809
Epoch 979/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2855
Epoch 980/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2997
Epoch 981/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2821
Epoch 982/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2891
Epoch 983/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2852
Epoch 984/1000
13/13 [=====] - 0s 2ms/step - loss: 0.2979
Epoch 985/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3059
Epoch 986/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3009
Epoch 987/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2782
Epoch 988/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2908
Epoch 989/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.2949
Epoch 990/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3019
Epoch 991/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3014
Epoch 992/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3222
Epoch 993/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3149
Epoch 994/1000
13/13 [=====] - 0s 1ms/step - loss: 0.2945
Epoch 995/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3193
Epoch 996/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3032
Epoch 997/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3222
Epoch 998/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3032
Epoch 999/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3382
Epoch 1000/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3072
Finished lambda = 0.05
Epoch 1/1000
13/13 [=====] - 0s 1ms/step - loss: 4.4108
Epoch 2/1000
13/13 [=====] - 0s 1ms/step - loss: 1.6152
Epoch 3/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2678
Epoch 4/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0378
Epoch 5/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9732
Epoch 6/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9416
Epoch 7/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9104
Epoch 8/1000
13/13 [=====] - 0s 2ms/step - loss: 0.8727
Epoch 9/1000
13/13 [=====] - 0s 2ms/step - loss: 0.8062
Epoch 10/1000
13/13 [=====] - 0s 2ms/step - loss: 0.7577
Epoch 11/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7449
Epoch 12/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7385
Epoch 13/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7301
Epoch 14/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7345
Epoch 15/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7021
Epoch 16/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6913
Epoch 17/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7017
Epoch 18/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6966
```



```
Epoch 19/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6738
Epoch 20/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6586
Epoch 21/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6470
Epoch 22/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6562
Epoch 23/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6412
Epoch 24/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6285
Epoch 25/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6660
Epoch 26/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7893
Epoch 27/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6700
Epoch 28/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6161
Epoch 29/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6038
Epoch 30/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6206
Epoch 31/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6158
Epoch 32/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6180
Epoch 33/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6189
Epoch 34/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6364
Epoch 35/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6259
Epoch 36/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6000
Epoch 37/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5794
Epoch 38/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5651
Epoch 39/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5643
Epoch 40/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5662
Epoch 41/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5829
Epoch 42/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5519
Epoch 43/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5730
Epoch 44/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5827
Epoch 45/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5808
Epoch 46/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5647
Epoch 47/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5306
Epoch 48/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5690
```

```
Epoch 49/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5515
Epoch 50/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5254
Epoch 51/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5358
Epoch 52/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5246
Epoch 53/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5279
Epoch 54/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5094
Epoch 55/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5580
Epoch 56/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5081
Epoch 57/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5145
Epoch 58/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5091
Epoch 59/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5295
Epoch 60/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5395
Epoch 61/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5505
Epoch 62/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5332
Epoch 63/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5140
Epoch 64/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5291
Epoch 65/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5069
Epoch 66/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4977
Epoch 67/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5019
Epoch 68/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5031
Epoch 69/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4976
Epoch 70/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4968
Epoch 71/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4904
Epoch 72/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4871
Epoch 73/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4925
Epoch 74/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5061
Epoch 75/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4957
Epoch 76/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4993
Epoch 77/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4884
Epoch 78/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5047
```

```
Epoch 79/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5225
Epoch 80/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5006
Epoch 81/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5074
Epoch 82/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4818
Epoch 83/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4725
Epoch 84/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4635
Epoch 85/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4731
Epoch 86/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4724
Epoch 87/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4968
Epoch 88/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4784
Epoch 89/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4712
Epoch 90/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4623
Epoch 91/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4761
Epoch 92/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4676
Epoch 93/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4591
Epoch 94/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4546
Epoch 95/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4685
Epoch 96/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4507
Epoch 97/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4634
Epoch 98/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4609
Epoch 99/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4807
Epoch 100/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4816
Epoch 101/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4730
Epoch 102/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4632
Epoch 103/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4643
Epoch 104/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4558
Epoch 105/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4834
Epoch 106/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4390
Epoch 107/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4627
Epoch 108/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4726
```

```
Epoch 109/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4592
Epoch 110/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4518
Epoch 111/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4472
Epoch 112/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4456
Epoch 113/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4382
Epoch 114/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4383
Epoch 115/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4345
Epoch 116/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4440
Epoch 117/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4598
Epoch 118/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4485
Epoch 119/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4585
Epoch 120/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4728
Epoch 121/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5032
Epoch 122/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4577
Epoch 123/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4532
Epoch 124/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4396
Epoch 125/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4312
Epoch 126/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4356
Epoch 127/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4451
Epoch 128/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4343
Epoch 129/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4407
Epoch 130/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4342
Epoch 131/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4467
Epoch 132/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4287
Epoch 133/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4219
Epoch 134/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4433
Epoch 135/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4412
Epoch 136/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4442
Epoch 137/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4249
Epoch 138/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4426
```

```
Epoch 139/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4472
Epoch 140/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4496
Epoch 141/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4240
Epoch 142/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4164
Epoch 143/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4324
Epoch 144/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4364
Epoch 145/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4247
Epoch 146/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4220
Epoch 147/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4521
Epoch 148/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4323
Epoch 149/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4214
Epoch 150/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4187
Epoch 151/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4156
Epoch 152/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4156
Epoch 153/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4368
Epoch 154/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4204
Epoch 155/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4255
Epoch 156/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4275
Epoch 157/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4224
Epoch 158/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4191
Epoch 159/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4063
Epoch 160/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4310
Epoch 161/1000
13/13 [=====] - 0s 3ms/step - loss: 0.4397
Epoch 162/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4238
Epoch 163/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4104
Epoch 164/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4241
Epoch 165/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4434
Epoch 166/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4563
Epoch 167/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4730
Epoch 168/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4416
```

```
Epoch 169/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4269
Epoch 170/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4340
Epoch 171/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4231
Epoch 172/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4187
Epoch 173/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4355
Epoch 174/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4439
Epoch 175/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4214
Epoch 176/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4409
Epoch 177/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4273
Epoch 178/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4135
Epoch 179/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4220
Epoch 180/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4107
Epoch 181/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4295
Epoch 182/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4209
Epoch 183/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4066
Epoch 184/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4009
Epoch 185/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4039
Epoch 186/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4073
Epoch 187/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4138
Epoch 188/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4138
Epoch 189/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3972
Epoch 190/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3963
Epoch 191/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4098
Epoch 192/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4134
Epoch 193/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4113
Epoch 194/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4147
Epoch 195/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4009
Epoch 196/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3941
Epoch 197/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4205
Epoch 198/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3965
```

```
Epoch 199/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4059
Epoch 200/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4026
Epoch 201/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4267
Epoch 202/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3953
Epoch 203/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3961
Epoch 204/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4087
Epoch 205/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4498
Epoch 206/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4283
Epoch 207/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4083
Epoch 208/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4164
Epoch 209/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4392
Epoch 210/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4107
Epoch 211/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4193
Epoch 212/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4089
Epoch 213/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4024
Epoch 214/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4026
Epoch 215/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3942
Epoch 216/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4062
Epoch 217/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3920
Epoch 218/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4170
Epoch 219/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3963
Epoch 220/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3980
Epoch 221/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3872
Epoch 222/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4081
Epoch 223/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4014
Epoch 224/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4362
Epoch 225/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4328
Epoch 226/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4196
Epoch 227/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4344
Epoch 228/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3891
```

```
Epoch 229/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4011
Epoch 230/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4117
Epoch 231/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4020
Epoch 232/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4089
Epoch 233/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3886
Epoch 234/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3867
Epoch 235/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3872
Epoch 236/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3945
Epoch 237/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3930
Epoch 238/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4173
Epoch 239/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4059
Epoch 240/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3870
Epoch 241/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3891
Epoch 242/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3897
Epoch 243/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3873
Epoch 244/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3981
Epoch 245/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4005
Epoch 246/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4037
Epoch 247/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3795
Epoch 248/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3893
Epoch 249/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3979
Epoch 250/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3882
Epoch 251/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4142
Epoch 252/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4025
Epoch 253/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3925
Epoch 254/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4065
Epoch 255/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4040
Epoch 256/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3783
Epoch 257/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3990
Epoch 258/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3892
```



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Epoch 259/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3971
Epoch 260/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3846
Epoch 261/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4017
Epoch 262/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4647
Epoch 263/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4319
Epoch 264/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3958
Epoch 265/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3966
Epoch 266/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4172
Epoch 267/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4281
Epoch 268/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4147
Epoch 269/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3821
Epoch 270/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3746
Epoch 271/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3866
Epoch 272/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3881
Epoch 273/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4037
Epoch 274/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3788
Epoch 275/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3924
Epoch 276/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3845
Epoch 277/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3822
Epoch 278/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3805
Epoch 279/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4035
Epoch 280/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3930
Epoch 281/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3747
Epoch 282/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3784
Epoch 283/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3865
Epoch 284/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3871
Epoch 285/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4102
Epoch 286/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3941
Epoch 287/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3896
Epoch 288/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3839
```

```
Epoch 289/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3741
Epoch 290/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3838
Epoch 291/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3870
Epoch 292/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3662
Epoch 293/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3763
Epoch 294/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3986
Epoch 295/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4076
Epoch 296/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3774
Epoch 297/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3865
Epoch 298/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3903
Epoch 299/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3884
Epoch 300/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4250
Epoch 301/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3883
Epoch 302/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3911
Epoch 303/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3873
Epoch 304/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3741
Epoch 305/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3755
Epoch 306/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3871
Epoch 307/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3922
Epoch 308/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3880
Epoch 309/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3815
Epoch 310/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3688
Epoch 311/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3695
Epoch 312/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3710
Epoch 313/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3813
Epoch 314/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3800
Epoch 315/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3790
Epoch 316/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3730
Epoch 317/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3757
Epoch 318/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3691
```

```
Epoch 319/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3711
Epoch 320/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3838
Epoch 321/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3977
Epoch 322/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4034
Epoch 323/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4155
Epoch 324/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4079
Epoch 325/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3949
Epoch 326/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3863
Epoch 327/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3770
Epoch 328/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3937
Epoch 329/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3767
Epoch 330/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3663
Epoch 331/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3693
Epoch 332/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3721
Epoch 333/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4060
Epoch 334/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3939
Epoch 335/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3948
Epoch 336/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3953
Epoch 337/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4085
Epoch 338/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3805
Epoch 339/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3676
Epoch 340/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3890
Epoch 341/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3789
Epoch 342/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3711
Epoch 343/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3653
Epoch 344/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3605
Epoch 345/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3595
Epoch 346/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3624
Epoch 347/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3861
Epoch 348/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4245
```

```
Epoch 349/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3842
Epoch 350/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4167
Epoch 351/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3710
Epoch 352/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3902
Epoch 353/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3768
Epoch 354/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3687
Epoch 355/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3715
Epoch 356/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3635
Epoch 357/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3799
Epoch 358/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3953
Epoch 359/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3903
Epoch 360/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3931
Epoch 361/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4167
Epoch 362/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4668
Epoch 363/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4122
Epoch 364/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3726
Epoch 365/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3677
Epoch 366/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3646
Epoch 367/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3674
Epoch 368/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3870
Epoch 369/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4005
Epoch 370/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3737
Epoch 371/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3611
Epoch 372/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3596
Epoch 373/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3765
Epoch 374/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3559
Epoch 375/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3815
Epoch 376/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3792
Epoch 377/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3596
Epoch 378/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3725
```

```
Epoch 379/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3802
Epoch 380/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3789
Epoch 381/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4184
Epoch 382/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3751
Epoch 383/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3754
Epoch 384/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3619
Epoch 385/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3695
Epoch 386/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3558
Epoch 387/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3736
Epoch 388/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3715
Epoch 389/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3645
Epoch 390/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3506
Epoch 391/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3646
Epoch 392/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3801
Epoch 393/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3573
Epoch 394/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3603
Epoch 395/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3889
Epoch 396/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3806
Epoch 397/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3942
Epoch 398/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3785
Epoch 399/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3747
Epoch 400/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3722
Epoch 401/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3557
Epoch 402/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3602
Epoch 403/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3585
Epoch 404/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3580
Epoch 405/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3527
Epoch 406/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3589
Epoch 407/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3676
Epoch 408/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3608
```

```
Epoch 409/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3816
Epoch 410/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3903
Epoch 411/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3974
Epoch 412/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3793
Epoch 413/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3612
Epoch 414/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3546
Epoch 415/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3697
Epoch 416/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3753
Epoch 417/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3877
Epoch 418/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3629
Epoch 419/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3680
Epoch 420/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3529
Epoch 421/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3810
Epoch 422/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3942
Epoch 423/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3708
Epoch 424/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3714
Epoch 425/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3614
Epoch 426/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3594
Epoch 427/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3606
Epoch 428/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3702
Epoch 429/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3672
Epoch 430/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3621
Epoch 431/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3507
Epoch 432/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3580
Epoch 433/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3866
Epoch 434/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3977
Epoch 435/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4141
Epoch 436/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3973
Epoch 437/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3825
Epoch 438/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3787
```

```
Epoch 439/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3486
Epoch 440/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3452
Epoch 441/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3612
Epoch 442/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3801
Epoch 443/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3713
Epoch 444/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3672
Epoch 445/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3756
Epoch 446/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3542
Epoch 447/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3669
Epoch 448/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3581
Epoch 449/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3513
Epoch 450/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3530
Epoch 451/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3479
Epoch 452/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3608
Epoch 453/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3778
Epoch 454/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3737
Epoch 455/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3757
Epoch 456/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3648
Epoch 457/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3547
Epoch 458/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3836
Epoch 459/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3660
Epoch 460/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3583
Epoch 461/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3619
Epoch 462/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3489
Epoch 463/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3546
Epoch 464/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3698
Epoch 465/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3457
Epoch 466/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3767
Epoch 467/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3663
Epoch 468/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3994
```

```
Epoch 469/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4127
Epoch 470/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3461
Epoch 471/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3674
Epoch 472/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4088
Epoch 473/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4083
Epoch 474/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3995
Epoch 475/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3727
Epoch 476/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3590
Epoch 477/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3817
Epoch 478/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3652
Epoch 479/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3572
Epoch 480/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3603
Epoch 481/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3548
Epoch 482/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3754
Epoch 483/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3838
Epoch 484/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3781
Epoch 485/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3868
Epoch 486/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3549
Epoch 487/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3445
Epoch 488/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3504
Epoch 489/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3373
Epoch 490/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3543
Epoch 491/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3679
Epoch 492/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3704
Epoch 493/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3515
Epoch 494/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3519
Epoch 495/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3505
Epoch 496/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3695
Epoch 497/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4023
Epoch 498/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3514
```



```
Epoch 499/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3407
Epoch 500/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3586
Epoch 501/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3506
Epoch 502/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3584
Epoch 503/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3787
Epoch 504/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3688
Epoch 505/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3684
Epoch 506/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3850
Epoch 507/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3574
Epoch 508/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3377
Epoch 509/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3492
Epoch 510/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3462
Epoch 511/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3491
Epoch 512/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3592
Epoch 513/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3490
Epoch 514/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3454
Epoch 515/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3507
Epoch 516/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3569
Epoch 517/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3677
Epoch 518/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3614
Epoch 519/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3634
Epoch 520/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3617
Epoch 521/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3448
Epoch 522/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3628
Epoch 523/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3760
Epoch 524/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3388
Epoch 525/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3459
Epoch 526/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3543
Epoch 527/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3380
Epoch 528/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3437
```

```
Epoch 529/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3751
Epoch 530/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3648
Epoch 531/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3745
Epoch 532/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3427
Epoch 533/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3363
Epoch 534/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3613
Epoch 535/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3585
Epoch 536/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3419
Epoch 537/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4042
Epoch 538/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3569
Epoch 539/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3607
Epoch 540/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3926
Epoch 541/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3921
Epoch 542/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3779
Epoch 543/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3690
Epoch 544/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3546
Epoch 545/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3481
Epoch 546/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3615
Epoch 547/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3790
Epoch 548/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3645
Epoch 549/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3399
Epoch 550/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3411
Epoch 551/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3419
Epoch 552/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3433
Epoch 553/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3387
Epoch 554/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3496
Epoch 555/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3893
Epoch 556/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3866
Epoch 557/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3680
Epoch 558/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3494
```

```
Epoch 559/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3820
Epoch 560/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3540
Epoch 561/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3433
Epoch 562/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3526
Epoch 563/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3474
Epoch 564/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3639
Epoch 565/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3438
Epoch 566/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3591
Epoch 567/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3432
Epoch 568/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3477
Epoch 569/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3479
Epoch 570/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3357
Epoch 571/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3631
Epoch 572/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3494
Epoch 573/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3491
Epoch 574/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3634
Epoch 575/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3421
Epoch 576/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3376
Epoch 577/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3517
Epoch 578/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4289
Epoch 579/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3655
Epoch 580/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3348
Epoch 581/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3561
Epoch 582/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3491
Epoch 583/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3535
Epoch 584/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3777
Epoch 585/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3880
Epoch 586/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3622
Epoch 587/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3518
Epoch 588/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3364
```

```
Epoch 589/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3316
Epoch 590/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3345
Epoch 591/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3457
Epoch 592/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3437
Epoch 593/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3416
Epoch 594/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3382
Epoch 595/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4198
Epoch 596/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3980
Epoch 597/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3553
Epoch 598/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3443
Epoch 599/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3397
Epoch 600/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3560
Epoch 601/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3354
Epoch 602/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3442
Epoch 603/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3515
Epoch 604/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3411
Epoch 605/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3522
Epoch 606/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3730
Epoch 607/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3550
Epoch 608/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3641
Epoch 609/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3582
Epoch 610/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3544
Epoch 611/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3434
Epoch 612/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3697
Epoch 613/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3527
Epoch 614/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3493
Epoch 615/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3600
Epoch 616/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3441
Epoch 617/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3298
Epoch 618/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3708
```

```
Epoch 619/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4120
Epoch 620/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3960
Epoch 621/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3477
Epoch 622/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3472
Epoch 623/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3402
Epoch 624/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3303
Epoch 625/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3295
Epoch 626/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3439
Epoch 627/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3597
Epoch 628/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3733
Epoch 629/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3739
Epoch 630/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3786
Epoch 631/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3772
Epoch 632/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3710
Epoch 633/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3628
Epoch 634/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3477
Epoch 635/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3493
Epoch 636/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3619
Epoch 637/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3593
Epoch 638/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3451
Epoch 639/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3407
Epoch 640/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3518
Epoch 641/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3391
Epoch 642/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3499
Epoch 643/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3609
Epoch 644/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3491
Epoch 645/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3707
Epoch 646/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3656
Epoch 647/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3483
Epoch 648/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3620
```

```
Epoch 649/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3519
Epoch 650/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3463
Epoch 651/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3372
Epoch 652/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3288
Epoch 653/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3455
Epoch 654/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3510
Epoch 655/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3452
Epoch 656/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3342
Epoch 657/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3425
Epoch 658/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3408
Epoch 659/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3438
Epoch 660/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3629
Epoch 661/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3388
Epoch 662/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3458
Epoch 663/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3825
Epoch 664/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3546
Epoch 665/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3507
Epoch 666/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3458
Epoch 667/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3306
Epoch 668/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3268
Epoch 669/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3491
Epoch 670/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3328
Epoch 671/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3460
Epoch 672/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3741
Epoch 673/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3973
Epoch 674/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4035
Epoch 675/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3396
Epoch 676/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3385
Epoch 677/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3349
Epoch 678/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3301
```

```
Epoch 679/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3407
Epoch 680/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3355
Epoch 681/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3496
Epoch 682/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3359
Epoch 683/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3359
Epoch 684/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3374
Epoch 685/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3469
Epoch 686/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3476
Epoch 687/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3501
Epoch 688/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3403
Epoch 689/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4170
Epoch 690/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3794
Epoch 691/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3489
Epoch 692/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3530
Epoch 693/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3486
Epoch 694/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3428
Epoch 695/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3361
Epoch 696/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3315
Epoch 697/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3313
Epoch 698/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3447
Epoch 699/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3397
Epoch 700/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3474
Epoch 701/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3478
Epoch 702/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3240
Epoch 703/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3247
Epoch 704/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3524
Epoch 705/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3436
Epoch 706/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3538
Epoch 707/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3568
Epoch 708/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3442
```

```
Epoch 709/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3625
Epoch 710/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3536
Epoch 711/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3412
Epoch 712/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3877
Epoch 713/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3621
Epoch 714/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3362
Epoch 715/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3275
Epoch 716/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3338
Epoch 717/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3512
Epoch 718/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3662
Epoch 719/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4171
Epoch 720/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4011
Epoch 721/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3879
Epoch 722/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3584
Epoch 723/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3612
Epoch 724/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3530
Epoch 725/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3496
Epoch 726/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3479
Epoch 727/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3373
Epoch 728/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3449
Epoch 729/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3408
Epoch 730/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3427
Epoch 731/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3447
Epoch 732/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3544
Epoch 733/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3472
Epoch 734/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3532
Epoch 735/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3345
Epoch 736/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3746
Epoch 737/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3955
Epoch 738/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3424
```



```
Epoch 739/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3509
Epoch 740/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3442
Epoch 741/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3406
Epoch 742/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3748
Epoch 743/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3392
Epoch 744/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3318
Epoch 745/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3292
Epoch 746/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3423
Epoch 747/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3374
Epoch 748/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3527
Epoch 749/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3960
Epoch 750/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3644
Epoch 751/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3530
Epoch 752/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4011
Epoch 753/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3949
Epoch 754/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3561
Epoch 755/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3678
Epoch 756/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3568
Epoch 757/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3558
Epoch 758/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3618
Epoch 759/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3310
Epoch 760/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3440
Epoch 761/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3587
Epoch 762/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3487
Epoch 763/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3307
Epoch 764/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3483
Epoch 765/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3470
Epoch 766/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3420
Epoch 767/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3395
Epoch 768/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3605
```

```
Epoch 769/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3466
Epoch 770/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3246
Epoch 771/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3444
Epoch 772/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3440
Epoch 773/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3808
Epoch 774/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3748
Epoch 775/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3387
Epoch 776/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3771
Epoch 777/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3673
Epoch 778/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3236
Epoch 779/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3318
Epoch 780/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3410
Epoch 781/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3369
Epoch 782/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3241
Epoch 783/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3276
Epoch 784/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3281
Epoch 785/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3255
Epoch 786/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3382
Epoch 787/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3368
Epoch 788/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3300
Epoch 789/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3399
Epoch 790/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3347
Epoch 791/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3668
Epoch 792/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3751
Epoch 793/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3477
Epoch 794/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3503
Epoch 795/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3553
Epoch 796/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3749
Epoch 797/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3250
Epoch 798/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3587
```

```
Epoch 799/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3626
Epoch 800/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3492
Epoch 801/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3320
Epoch 802/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3297
Epoch 803/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3263
Epoch 804/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3263
Epoch 805/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3472
Epoch 806/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3360
Epoch 807/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3226
Epoch 808/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3571
Epoch 809/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3900
Epoch 810/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3652
Epoch 811/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3331
Epoch 812/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3247
Epoch 813/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3305
Epoch 814/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3334
Epoch 815/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3469
Epoch 816/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3443
Epoch 817/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3547
Epoch 818/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3516
Epoch 819/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3238
Epoch 820/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3692
Epoch 821/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3955
Epoch 822/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3554
Epoch 823/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3782
Epoch 824/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3596
Epoch 825/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3477
Epoch 826/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3321
Epoch 827/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3251
Epoch 828/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3486
```

```
Epoch 829/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3712
Epoch 830/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4405
Epoch 831/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3504
Epoch 832/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3585
Epoch 833/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3477
Epoch 834/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3505
Epoch 835/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3195
Epoch 836/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3331
Epoch 837/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3321
Epoch 838/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3335
Epoch 839/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3243
Epoch 840/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3680
Epoch 841/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3541
Epoch 842/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3493
Epoch 843/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3486
Epoch 844/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3291
Epoch 845/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3225
Epoch 846/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3236
Epoch 847/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3372
Epoch 848/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3439
Epoch 849/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3211
Epoch 850/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3334
Epoch 851/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3320
Epoch 852/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3474
Epoch 853/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3588
Epoch 854/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3335
Epoch 855/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3348
Epoch 856/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3312
Epoch 857/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3398
Epoch 858/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3633
```

```
Epoch 859/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3900
Epoch 860/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3350
Epoch 861/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3831
Epoch 862/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3402
Epoch 863/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3272
Epoch 864/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3779
Epoch 865/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3784
Epoch 866/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3872
Epoch 867/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3664
Epoch 868/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3793
Epoch 869/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3524
Epoch 870/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3704
Epoch 871/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3530
Epoch 872/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3383
Epoch 873/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3344
Epoch 874/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3499
Epoch 875/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3379
Epoch 876/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3336
Epoch 877/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3511
Epoch 878/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3543
Epoch 879/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3316
Epoch 880/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3213
Epoch 881/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3605
Epoch 882/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3719
Epoch 883/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4439
Epoch 884/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3613
Epoch 885/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3517
Epoch 886/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3509
Epoch 887/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3828
Epoch 888/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3646
```

```
Epoch 889/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3585
Epoch 890/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3916
Epoch 891/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3338
Epoch 892/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3419
Epoch 893/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3422
Epoch 894/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3555
Epoch 895/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3903
Epoch 896/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3614
Epoch 897/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3261
Epoch 898/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3552
Epoch 899/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3549
Epoch 900/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3447
Epoch 901/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3431
Epoch 902/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3419
Epoch 903/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3358
Epoch 904/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3246
Epoch 905/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3338
Epoch 906/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3498
Epoch 907/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3453
Epoch 908/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3651
Epoch 909/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4167
Epoch 910/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3856
Epoch 911/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3256
Epoch 912/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3269
Epoch 913/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3229
Epoch 914/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3425
Epoch 915/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3361
Epoch 916/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3322
Epoch 917/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3371
Epoch 918/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3177
```

```
Epoch 919/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3531
Epoch 920/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3742
Epoch 921/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3409
Epoch 922/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3491
Epoch 923/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3233
Epoch 924/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3472
Epoch 925/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3429
Epoch 926/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3439
Epoch 927/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3434
Epoch 928/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3214
Epoch 929/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3468
Epoch 930/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3926
Epoch 931/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4323
Epoch 932/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3969
Epoch 933/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3474
Epoch 934/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3832
Epoch 935/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3413
Epoch 936/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3432
Epoch 937/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3209
Epoch 938/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3419
Epoch 939/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3388
Epoch 940/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3351
Epoch 941/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3141
Epoch 942/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3241
Epoch 943/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3465
Epoch 944/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3446
Epoch 945/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3399
Epoch 946/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3194
Epoch 947/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3268
Epoch 948/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3252
```

```
Epoch 949/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3207
Epoch 950/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3130
Epoch 951/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3237
Epoch 952/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3361
Epoch 953/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3568
Epoch 954/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3423
Epoch 955/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3172
Epoch 956/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3455
Epoch 957/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3316
Epoch 958/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3256
Epoch 959/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3079
Epoch 960/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3193
Epoch 961/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3263
Epoch 962/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3160
Epoch 963/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3396
Epoch 964/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3169
Epoch 965/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3214
Epoch 966/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3320
Epoch 967/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3258
Epoch 968/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3440
Epoch 969/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3382
Epoch 970/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3413
Epoch 971/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3368
Epoch 972/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3286
Epoch 973/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3292
Epoch 974/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3308
Epoch 975/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3500
Epoch 976/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3437
Epoch 977/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3364
Epoch 978/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3409
```



```
Epoch 979/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3274
Epoch 980/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3351
Epoch 981/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3243
Epoch 982/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3242
Epoch 983/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3155
Epoch 984/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3318
Epoch 985/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3481
Epoch 986/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3551
Epoch 987/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3502
Epoch 988/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3214
Epoch 989/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3325
Epoch 990/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3420
Epoch 991/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3480
Epoch 992/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3443
Epoch 993/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3276
Epoch 994/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3339
Epoch 995/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3591
Epoch 996/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3506
Epoch 997/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3676
Epoch 998/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3202
Epoch 999/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3518
Epoch 1000/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3522
Finished lambda = 0.1
Epoch 1/1000
13/13 [=====] - 0s 1ms/step - loss: 7.2838
Epoch 2/1000
13/13 [=====] - 0s 1ms/step - loss: 2.0551
Epoch 3/1000
13/13 [=====] - 0s 1ms/step - loss: 1.7846
Epoch 4/1000
13/13 [=====] - 0s 1ms/step - loss: 1.4534
Epoch 5/1000
13/13 [=====] - 0s 1ms/step - loss: 1.3131
Epoch 6/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2755
Epoch 7/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1754
Epoch 8/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 1.1159
Epoch 9/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0573
Epoch 10/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0176
Epoch 11/1000
13/13 [=====] - 0s 2ms/step - loss: 0.9834
Epoch 12/1000
13/13 [=====] - 0s 2ms/step - loss: 0.9694
Epoch 13/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9627
Epoch 14/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9583
Epoch 15/1000
13/13 [=====] - 0s 2ms/step - loss: 0.9121
Epoch 16/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9071
Epoch 17/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9117
Epoch 18/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9068
Epoch 19/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8829
Epoch 20/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8674
Epoch 21/1000
13/13 [=====] - 0s 2ms/step - loss: 0.8367
Epoch 22/1000
13/13 [=====] - 0s 2ms/step - loss: 0.8482
Epoch 23/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8418
Epoch 24/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8121
Epoch 25/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8082
Epoch 26/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9192
Epoch 27/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8245
Epoch 28/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7831
Epoch 29/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7644
Epoch 30/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7913
Epoch 31/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7736
Epoch 32/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7985
Epoch 33/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7661
Epoch 34/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7835
Epoch 35/1000
13/13 [=====] - 0s 2ms/step - loss: 0.7840
Epoch 36/1000
13/13 [=====] - 0s 2ms/step - loss: 0.7438
Epoch 37/1000
13/13 [=====] - 0s 2ms/step - loss: 0.7286
Epoch 38/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.7131
Epoch 39/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7271
Epoch 40/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7491
Epoch 41/1000
13/13 [=====] - 0s 2ms/step - loss: 0.7415
Epoch 42/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7060
Epoch 43/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7281
Epoch 44/1000
13/13 [=====] - 0s 2ms/step - loss: 0.7354
Epoch 45/1000
13/13 [=====] - 0s 2ms/step - loss: 0.7158
Epoch 46/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7330
Epoch 47/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7105
Epoch 48/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7459
Epoch 49/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7038
Epoch 50/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7028
Epoch 51/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6969
Epoch 52/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6733
Epoch 53/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6651
Epoch 54/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6583
Epoch 55/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7071
Epoch 56/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6595
Epoch 57/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6722
Epoch 58/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6560
Epoch 59/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6692
Epoch 60/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6596
Epoch 61/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6858
Epoch 62/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6670
Epoch 63/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6696
Epoch 64/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6734
Epoch 65/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6621
Epoch 66/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6658
Epoch 67/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6463
Epoch 68/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.6432
Epoch 69/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6441
Epoch 70/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6446
Epoch 71/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6575
Epoch 72/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6351
Epoch 73/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6341
Epoch 74/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6414
Epoch 75/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6254
Epoch 76/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6347
Epoch 77/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6258
Epoch 78/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6154
Epoch 79/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6351
Epoch 80/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6178
Epoch 81/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6239
Epoch 82/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6289
Epoch 83/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5978
Epoch 84/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6050
Epoch 85/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6052
Epoch 86/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6113
Epoch 87/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6024
Epoch 88/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6138
Epoch 89/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6129
Epoch 90/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5985
Epoch 91/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6099
Epoch 92/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5932
Epoch 93/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5875
Epoch 94/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5811
Epoch 95/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5869
Epoch 96/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5742
Epoch 97/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5784
Epoch 98/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.5912
Epoch 99/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6271
Epoch 100/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6397
Epoch 101/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6296
Epoch 102/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5932
Epoch 103/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5895
Epoch 104/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5770
Epoch 105/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6223
Epoch 106/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6444
Epoch 107/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6136
Epoch 108/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6260
Epoch 109/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5932
Epoch 110/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5812
Epoch 111/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5769
Epoch 112/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5692
Epoch 113/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5609
Epoch 114/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5601
Epoch 115/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5635
Epoch 116/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5645
Epoch 117/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5887
Epoch 118/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6015
Epoch 119/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6009
Epoch 120/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5949
Epoch 121/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5730
Epoch 122/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5757
Epoch 123/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5619
Epoch 124/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5726
Epoch 125/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5493
Epoch 126/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5541
Epoch 127/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5643
Epoch 128/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.5455
Epoch 129/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5416
Epoch 130/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5385
Epoch 131/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5590
Epoch 132/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5797
Epoch 133/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5397
Epoch 134/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5500
Epoch 135/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5405
Epoch 136/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5504
Epoch 137/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5411
Epoch 138/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5681
Epoch 139/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5478
Epoch 140/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5573
Epoch 141/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5843
Epoch 142/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5409
Epoch 143/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5355
Epoch 144/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5568
Epoch 145/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5410
Epoch 146/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5425
Epoch 147/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5821
Epoch 148/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5624
Epoch 149/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5551
Epoch 150/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5425
Epoch 151/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5282
Epoch 152/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5351
Epoch 153/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5337
Epoch 154/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5264
Epoch 155/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5251
Epoch 156/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5161
Epoch 157/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5294
Epoch 158/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.5334
Epoch 159/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5315
Epoch 160/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5459
Epoch 161/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5806
Epoch 162/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5826
Epoch 163/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5293
Epoch 164/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5293
Epoch 165/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5527
Epoch 166/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5598
Epoch 167/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5424
Epoch 168/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5380
Epoch 169/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5123
Epoch 170/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5413
Epoch 171/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5388
Epoch 172/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5280
Epoch 173/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5230
Epoch 174/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5255
Epoch 175/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5078
Epoch 176/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5260
Epoch 177/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5432
Epoch 178/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5237
Epoch 179/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5139
Epoch 180/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5403
Epoch 181/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5194
Epoch 182/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5139
Epoch 183/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5057
Epoch 184/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5172
Epoch 185/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5153
Epoch 186/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5393
Epoch 187/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5100
Epoch 188/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.5178
Epoch 189/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5120
Epoch 190/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5030
Epoch 191/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5170
Epoch 192/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5185
Epoch 193/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5065
Epoch 194/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4988
Epoch 195/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4950
Epoch 196/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4914
Epoch 197/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5045
Epoch 198/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4936
Epoch 199/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4989
Epoch 200/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5054
Epoch 201/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5253
Epoch 202/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4909
Epoch 203/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4979
Epoch 204/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5057
Epoch 205/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5732
Epoch 206/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5126
Epoch 207/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5196
Epoch 208/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5249
Epoch 209/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5472
Epoch 210/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5113
Epoch 211/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4998
Epoch 212/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4997
Epoch 213/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5026
Epoch 214/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4955
Epoch 215/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4979
Epoch 216/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5079
Epoch 217/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5042
Epoch 218/1000
```



```
13/13 [=====] - 0s 1ms/step - loss: 0.4975
Epoch 219/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5030
Epoch 220/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4853
Epoch 221/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4801
Epoch 222/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4962
Epoch 223/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5016
Epoch 224/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5078
Epoch 225/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4838
Epoch 226/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5206
Epoch 227/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5139
Epoch 228/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4918
Epoch 229/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5080
Epoch 230/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5223
Epoch 231/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5286
Epoch 232/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5476
Epoch 233/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4949
Epoch 234/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4916
Epoch 235/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4853
Epoch 236/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4919
Epoch 237/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5054
Epoch 238/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5125
Epoch 239/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5092
Epoch 240/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4906
Epoch 241/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4742
Epoch 242/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4842
Epoch 243/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4843
Epoch 244/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4796
Epoch 245/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4914
Epoch 246/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4861
Epoch 247/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4696
Epoch 248/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4879
Epoch 249/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5006
Epoch 250/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4833
Epoch 251/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5313
Epoch 252/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5042
Epoch 253/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4940
Epoch 254/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5082
Epoch 255/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4907
Epoch 256/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4743
Epoch 257/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4810
Epoch 258/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4749
Epoch 259/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4842
Epoch 260/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4947
Epoch 261/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4758
Epoch 262/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5331
Epoch 263/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5271
Epoch 264/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5035
Epoch 265/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4722
Epoch 266/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4894
Epoch 267/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4896
Epoch 268/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4953
Epoch 269/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4604
Epoch 270/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4646
Epoch 271/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4813
Epoch 272/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4771
Epoch 273/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5016
Epoch 274/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4745
Epoch 275/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4734
Epoch 276/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4702
Epoch 277/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4739
Epoch 278/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4711
Epoch 279/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5076
Epoch 280/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4998
Epoch 281/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4750
Epoch 282/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4715
Epoch 283/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4701
Epoch 284/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4587
Epoch 285/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4752
Epoch 286/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4881
Epoch 287/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5143
Epoch 288/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5074
Epoch 289/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4710
Epoch 290/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4678
Epoch 291/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4738
Epoch 292/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4588
Epoch 293/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4635
Epoch 294/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4734
Epoch 295/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5045
Epoch 296/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4759
Epoch 297/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4675
Epoch 298/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4701
Epoch 299/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4841
Epoch 300/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4755
Epoch 301/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4638
Epoch 302/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4675
Epoch 303/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4806
Epoch 304/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5034
Epoch 305/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4652
Epoch 306/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4883
Epoch 307/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4686
Epoch 308/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4561
Epoch 309/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4643
Epoch 310/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4601
Epoch 311/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4529
Epoch 312/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4581
Epoch 313/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4630
Epoch 314/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4640
Epoch 315/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4563
Epoch 316/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4510
Epoch 317/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4544
Epoch 318/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4500
Epoch 319/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4474
Epoch 320/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4672
Epoch 321/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4769
Epoch 322/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4871
Epoch 323/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5110
Epoch 324/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5246
Epoch 325/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4954
Epoch 326/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4884
Epoch 327/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4803
Epoch 328/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4911
Epoch 329/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4656
Epoch 330/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4544
Epoch 331/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4534
Epoch 332/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4527
Epoch 333/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5123
Epoch 334/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4751
Epoch 335/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4861
Epoch 336/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5144
Epoch 337/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4947
Epoch 338/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4884
Epoch 339/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4511
Epoch 340/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4455
Epoch 341/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4476
Epoch 342/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4423
Epoch 343/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4427
Epoch 344/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4415
Epoch 345/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4390
Epoch 346/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4430
Epoch 347/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4589
Epoch 348/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4729
Epoch 349/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4603
Epoch 350/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4828
Epoch 351/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4451
Epoch 352/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4632
Epoch 353/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4535
Epoch 354/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4450
Epoch 355/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4499
Epoch 356/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4434
Epoch 357/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4495
Epoch 358/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4678
Epoch 359/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4741
Epoch 360/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4636
Epoch 361/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4752
Epoch 362/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5159
Epoch 363/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4562
Epoch 364/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4568
Epoch 365/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4431
Epoch 366/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4340
Epoch 367/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4408
Epoch 368/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4511
Epoch 369/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4525
Epoch 370/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4493
Epoch 371/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4418
Epoch 372/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4392
Epoch 373/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4522
Epoch 374/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4561
Epoch 375/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4664
Epoch 376/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4759
Epoch 377/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4364
Epoch 378/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4426
Epoch 379/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4528
Epoch 380/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4351
Epoch 381/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4974
Epoch 382/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4761
Epoch 383/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4495
Epoch 384/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4370
Epoch 385/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4426
Epoch 386/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4294
Epoch 387/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4467
Epoch 388/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4420
Epoch 389/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4381
Epoch 390/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4315
Epoch 391/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4400
Epoch 392/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4426
Epoch 393/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4371
Epoch 394/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4504
Epoch 395/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4784
Epoch 396/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4923
Epoch 397/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4886
Epoch 398/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4669
Epoch 399/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4750
Epoch 400/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4542
Epoch 401/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4308
Epoch 402/1000
13/13 [=====] - 0s 3ms/step - loss: 0.4336
Epoch 403/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4424
Epoch 404/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4456
Epoch 405/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4327
Epoch 406/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4367
Epoch 407/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4491
Epoch 408/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4618
Epoch 409/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4315
Epoch 410/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4478
Epoch 411/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4772
Epoch 412/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4359
Epoch 413/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4450
Epoch 414/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4532
Epoch 415/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4530
Epoch 416/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4359
Epoch 417/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4529
Epoch 418/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4428
Epoch 419/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4392
Epoch 420/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4255
Epoch 421/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4400
Epoch 422/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4473
Epoch 423/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4358
Epoch 424/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4293
Epoch 425/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4274
Epoch 426/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4288
Epoch 427/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4489
Epoch 428/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4544
Epoch 429/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4436
Epoch 430/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4434
Epoch 431/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4273
Epoch 432/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4306
Epoch 433/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4393
Epoch 434/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4556
Epoch 435/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4612
Epoch 436/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4469
Epoch 437/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4516
Epoch 438/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4392
Epoch 439/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4240
Epoch 440/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4217
Epoch 441/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4308
Epoch 442/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4555
Epoch 443/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4455
Epoch 444/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4483
Epoch 445/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4760
Epoch 446/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4594
Epoch 447/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4481
Epoch 448/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4311
Epoch 449/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4227
Epoch 450/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4253
Epoch 451/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4216
Epoch 452/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4263
Epoch 453/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4422
Epoch 454/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4600
Epoch 455/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4672
Epoch 456/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4632
Epoch 457/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4223
Epoch 458/1000
```



```
13/13 [=====] - 0s 1ms/step - loss: 0.4456
Epoch 459/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4286
Epoch 460/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4192
Epoch 461/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4185
Epoch 462/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4142
Epoch 463/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4197
Epoch 464/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4321
Epoch 465/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4160
Epoch 466/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4604
Epoch 467/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4266
Epoch 468/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4553
Epoch 469/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4866
Epoch 470/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4273
Epoch 471/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4267
Epoch 472/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4532
Epoch 473/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4818
Epoch 474/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4721
Epoch 475/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4397
Epoch 476/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4200
Epoch 477/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4450
Epoch 478/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4254
Epoch 479/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4612
Epoch 480/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4775
Epoch 481/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4412
Epoch 482/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4435
Epoch 483/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4726
Epoch 484/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4446
Epoch 485/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4720
Epoch 486/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4310
Epoch 487/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4129
Epoch 488/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4187
Epoch 489/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4090
Epoch 490/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4243
Epoch 491/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4268
Epoch 492/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4485
Epoch 493/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4289
Epoch 494/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4135
Epoch 495/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4190
Epoch 496/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4353
Epoch 497/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5030
Epoch 498/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4483
Epoch 499/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4128
Epoch 500/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4336
Epoch 501/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4161
Epoch 502/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4240
Epoch 503/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4541
Epoch 504/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4582
Epoch 505/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4530
Epoch 506/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4640
Epoch 507/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4519
Epoch 508/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4121
Epoch 509/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4256
Epoch 510/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4198
Epoch 511/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4277
Epoch 512/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4301
Epoch 513/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4237
Epoch 514/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4179
Epoch 515/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4208
Epoch 516/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4162
Epoch 517/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4181
Epoch 518/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.4150
Epoch 519/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4184
Epoch 520/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4367
Epoch 521/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4387
Epoch 522/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4276
Epoch 523/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4592
Epoch 524/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4149
Epoch 525/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4229
Epoch 526/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4185
Epoch 527/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4041
Epoch 528/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4096
Epoch 529/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4515
Epoch 530/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4353
Epoch 531/1000
13/13 [=====] - 0s 3ms/step - loss: 0.4401
Epoch 532/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4090
Epoch 533/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4037
Epoch 534/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4253
Epoch 535/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4337
Epoch 536/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4039
Epoch 537/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4584
Epoch 538/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4196
Epoch 539/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4141
Epoch 540/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4341
Epoch 541/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4805
Epoch 542/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4373
Epoch 543/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4305
Epoch 544/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4413
Epoch 545/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4077
Epoch 546/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4144
Epoch 547/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4326
Epoch 548/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4097
Epoch 549/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4138
Epoch 550/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4149
Epoch 551/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4187
Epoch 552/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4143
Epoch 553/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4085
Epoch 554/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4111
Epoch 555/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4896
Epoch 556/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4842
Epoch 557/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4268
Epoch 558/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4201
Epoch 559/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4512
Epoch 560/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4201
Epoch 561/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4116
Epoch 562/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4240
Epoch 563/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4101
Epoch 564/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4343
Epoch 565/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4125
Epoch 566/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4252
Epoch 567/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4124
Epoch 568/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4187
Epoch 569/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4197
Epoch 570/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4102
Epoch 571/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4254
Epoch 572/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4301
Epoch 573/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4197
Epoch 574/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4354
Epoch 575/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4202
Epoch 576/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4123
Epoch 577/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4149
Epoch 578/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.5085
Epoch 579/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4512
Epoch 580/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4118
Epoch 581/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4228
Epoch 582/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4165
Epoch 583/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4123
Epoch 584/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4278
Epoch 585/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4558
Epoch 586/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4494
Epoch 587/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4156
Epoch 588/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4086
Epoch 589/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3963
Epoch 590/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3963
Epoch 591/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4061
Epoch 592/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4033
Epoch 593/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4106
Epoch 594/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4466
Epoch 595/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4766
Epoch 596/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4375
Epoch 597/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4133
Epoch 598/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4064
Epoch 599/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4032
Epoch 600/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4128
Epoch 601/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4025
Epoch 602/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4110
Epoch 603/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4029
Epoch 604/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4034
Epoch 605/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4090
Epoch 606/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4302
Epoch 607/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4285
Epoch 608/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.4311
Epoch 609/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4086
Epoch 610/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4206
Epoch 611/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4228
Epoch 612/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4253
Epoch 613/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4177
Epoch 614/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4284
Epoch 615/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4465
Epoch 616/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4599
Epoch 617/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4251
Epoch 618/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4487
Epoch 619/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4983
Epoch 620/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4541
Epoch 621/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4057
Epoch 622/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4028
Epoch 623/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4032
Epoch 624/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3947
Epoch 625/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3925
Epoch 626/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4007
Epoch 627/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4037
Epoch 628/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4328
Epoch 629/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4184
Epoch 630/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4324
Epoch 631/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4507
Epoch 632/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4323
Epoch 633/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4336
Epoch 634/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4433
Epoch 635/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4155
Epoch 636/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4310
Epoch 637/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4269
Epoch 638/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3963
Epoch 639/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4008
Epoch 640/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4308
Epoch 641/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4125
Epoch 642/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4309
Epoch 643/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4495
Epoch 644/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4195
Epoch 645/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4489
Epoch 646/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4399
Epoch 647/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4106
Epoch 648/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4153
Epoch 649/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4096
Epoch 650/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4077
Epoch 651/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4082
Epoch 652/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3946
Epoch 653/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4057
Epoch 654/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4083
Epoch 655/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4104
Epoch 656/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4018
Epoch 657/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4000
Epoch 658/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3936
Epoch 659/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3948
Epoch 660/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4143
Epoch 661/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3934
Epoch 662/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3924
Epoch 663/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4252
Epoch 664/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4426
Epoch 665/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4578
Epoch 666/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4498
Epoch 667/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4361
Epoch 668/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4021
Epoch 669/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4077
Epoch 670/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3990
Epoch 671/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4093
Epoch 672/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4185
Epoch 673/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4217
Epoch 674/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4400
Epoch 675/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3952
Epoch 676/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3975
Epoch 677/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3993
Epoch 678/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3960
Epoch 679/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4017
Epoch 680/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3975
Epoch 681/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4184
Epoch 682/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3984
Epoch 683/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3983
Epoch 684/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4012
Epoch 685/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4060
Epoch 686/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4070
Epoch 687/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3938
Epoch 688/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3855
Epoch 689/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4433
Epoch 690/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4344
Epoch 691/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4117
Epoch 692/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3982
Epoch 693/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3852
Epoch 694/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3904
Epoch 695/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3934
Epoch 696/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3949
Epoch 697/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3998
Epoch 698/1000
```



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13/13 [=====] - 0s 1ms/step - loss: 0.4108
Epoch 699/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3995
Epoch 700/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3971
Epoch 701/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4110
Epoch 702/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3990
Epoch 703/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3839
Epoch 704/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4110
Epoch 705/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4100
Epoch 706/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4256
Epoch 707/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4245
Epoch 708/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4033
Epoch 709/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4162
Epoch 710/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4148
Epoch 711/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4107
Epoch 712/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4506
Epoch 713/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3995
Epoch 714/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4031
Epoch 715/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3881
Epoch 716/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4011
Epoch 717/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4111
Epoch 718/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4082
Epoch 719/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4324
Epoch 720/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3998
Epoch 721/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4007
Epoch 722/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3821
Epoch 723/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4279
Epoch 724/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4108
Epoch 725/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4203
Epoch 726/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4106
Epoch 727/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3960
Epoch 728/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4011
Epoch 729/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3925
Epoch 730/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4111
Epoch 731/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4025
Epoch 732/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3946
Epoch 733/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3930
Epoch 734/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4042
Epoch 735/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4124
Epoch 736/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4044
Epoch 737/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4035
Epoch 738/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4174
Epoch 739/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4223
Epoch 740/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4049
Epoch 741/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4326
Epoch 742/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4512
Epoch 743/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4034
Epoch 744/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4160
Epoch 745/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4045
Epoch 746/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4009
Epoch 747/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3862
Epoch 748/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4000
Epoch 749/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4679
Epoch 750/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4137
Epoch 751/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4090
Epoch 752/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4941
Epoch 753/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4794
Epoch 754/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4169
Epoch 755/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4138
Epoch 756/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4132
Epoch 757/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4178
Epoch 758/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4408
Epoch 759/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4225
Epoch 760/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4478
Epoch 761/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4528
Epoch 762/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4216
Epoch 763/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4020
Epoch 764/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4229
Epoch 765/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4185
Epoch 766/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4077
Epoch 767/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4057
Epoch 768/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3991
Epoch 769/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3913
Epoch 770/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3857
Epoch 771/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3897
Epoch 772/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3951
Epoch 773/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4169
Epoch 774/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4574
Epoch 775/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4232
Epoch 776/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3885
Epoch 777/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4120
Epoch 778/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3823
Epoch 779/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3929
Epoch 780/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3963
Epoch 781/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4151
Epoch 782/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3870
Epoch 783/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3966
Epoch 784/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3958
Epoch 785/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3841
Epoch 786/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3922
Epoch 787/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3944
Epoch 788/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3836
Epoch 789/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3968
Epoch 790/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4003
Epoch 791/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4096
Epoch 792/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4424
Epoch 793/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4134
Epoch 794/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4296
Epoch 795/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4233
Epoch 796/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4387
Epoch 797/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3979
Epoch 798/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4014
Epoch 799/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3931
Epoch 800/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3957
Epoch 801/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3889
Epoch 802/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3845
Epoch 803/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3798
Epoch 804/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3732
Epoch 805/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3889
Epoch 806/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3966
Epoch 807/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3937
Epoch 808/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4736
Epoch 809/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5095
Epoch 810/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4076
Epoch 811/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3790
Epoch 812/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3866
Epoch 813/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3996
Epoch 814/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3929
Epoch 815/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4063
Epoch 816/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4033
Epoch 817/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4012
Epoch 818/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3922
Epoch 819/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3792
Epoch 820/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4353
Epoch 821/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4512
Epoch 822/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4197
Epoch 823/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4006
Epoch 824/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3883
Epoch 825/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3858
Epoch 826/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3904
Epoch 827/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3910
Epoch 828/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3940
Epoch 829/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4195
Epoch 830/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4330
Epoch 831/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3929
Epoch 832/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3859
Epoch 833/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3836
Epoch 834/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3889
Epoch 835/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3988
Epoch 836/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3908
Epoch 837/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3884
Epoch 838/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4069
Epoch 839/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3866
Epoch 840/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4160
Epoch 841/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4541
Epoch 842/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4064
Epoch 843/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4063
Epoch 844/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3923
Epoch 845/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3861
Epoch 846/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3959
Epoch 847/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4023
Epoch 848/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3907
Epoch 849/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3939
Epoch 850/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4055
Epoch 851/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4009
Epoch 852/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3969
Epoch 853/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4111
Epoch 854/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3912
Epoch 855/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3819
Epoch 856/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3844
Epoch 857/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3815
Epoch 858/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3950
Epoch 859/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4427
Epoch 860/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3911
Epoch 861/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4404
Epoch 862/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4059
Epoch 863/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3811
Epoch 864/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4319
Epoch 865/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4412
Epoch 866/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3937
Epoch 867/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3906
Epoch 868/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3796
Epoch 869/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3826
Epoch 870/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4078
Epoch 871/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4050
Epoch 872/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3815
Epoch 873/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3730
Epoch 874/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3851
Epoch 875/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3864
Epoch 876/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3979
Epoch 877/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3940
Epoch 878/1000
```

```
13/13 [=====] - 0s 2ms/step - loss: 0.3888
Epoch 879/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3808
Epoch 880/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3858
Epoch 881/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4206
Epoch 882/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4327
Epoch 883/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5048
Epoch 884/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4301
Epoch 885/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4167
Epoch 886/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3769
Epoch 887/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3931
Epoch 888/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3925
Epoch 889/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3921
Epoch 890/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4040
Epoch 891/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3920
Epoch 892/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4015
Epoch 893/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3892
Epoch 894/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3840
Epoch 895/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4322
Epoch 896/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4022
Epoch 897/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3974
Epoch 898/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3959
Epoch 899/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4191
Epoch 900/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4037
Epoch 901/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4297
Epoch 902/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4191
Epoch 903/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4176
Epoch 904/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3814
Epoch 905/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3940
Epoch 906/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3930
Epoch 907/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3942
Epoch 908/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.4057
Epoch 909/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4745
Epoch 910/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4294
Epoch 911/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3836
Epoch 912/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3871
Epoch 913/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3753
Epoch 914/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3965
Epoch 915/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3915
Epoch 916/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3883
Epoch 917/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3877
Epoch 918/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3736
Epoch 919/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3988
Epoch 920/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4315
Epoch 921/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3943
Epoch 922/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4095
Epoch 923/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3918
Epoch 924/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4149
Epoch 925/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3892
Epoch 926/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3879
Epoch 927/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3986
Epoch 928/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3718
Epoch 929/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3771
Epoch 930/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4297
Epoch 931/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4926
Epoch 932/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4711
Epoch 933/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4084
Epoch 934/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4159
Epoch 935/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3825
Epoch 936/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3782
Epoch 937/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3919
Epoch 938/1000
```



```
13/13 [=====] - 0s 1ms/step - loss: 0.3912
Epoch 939/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4003
Epoch 940/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3852
Epoch 941/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3704
Epoch 942/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3685
Epoch 943/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3872
Epoch 944/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3973
Epoch 945/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3788
Epoch 946/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3820
Epoch 947/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3949
Epoch 948/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3878
Epoch 949/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3737
Epoch 950/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3738
Epoch 951/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3627
Epoch 952/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3730
Epoch 953/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3862
Epoch 954/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4069
Epoch 955/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3820
Epoch 956/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4217
Epoch 957/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4178
Epoch 958/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3750
Epoch 959/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3681
Epoch 960/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3767
Epoch 961/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3829
Epoch 962/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3668
Epoch 963/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3840
Epoch 964/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3702
Epoch 965/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3770
Epoch 966/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3872
Epoch 967/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3841
Epoch 968/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3991
Epoch 969/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4312
Epoch 970/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4067
Epoch 971/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4153
Epoch 972/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4053
Epoch 973/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3919
Epoch 974/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3925
Epoch 975/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4016
Epoch 976/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3889
Epoch 977/1000
13/13 [=====] - 0s 3ms/step - loss: 0.3888
Epoch 978/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3669
Epoch 979/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3839
Epoch 980/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3987
Epoch 981/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3888
Epoch 982/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3800
Epoch 983/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3707
Epoch 984/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3926
Epoch 985/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3927
Epoch 986/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3896
Epoch 987/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4034
Epoch 988/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3902
Epoch 989/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3921
Epoch 990/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3838
Epoch 991/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3971
Epoch 992/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3706
Epoch 993/1000
13/13 [=====] - 0s 2ms/step - loss: 0.3801
Epoch 994/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3872
Epoch 995/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3873
Epoch 996/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3801
Epoch 997/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4105
Epoch 998/1000
```

```
13/13 [=====] - 0s 1ms/step - loss: 0.3783
Epoch 999/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3975
Epoch 1000/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3985
Finished lambda = 0.2
Epoch 1/1000
13/13 [=====] - 1s 2ms/step - loss: 9.8109
Epoch 2/1000
13/13 [=====] - 0s 1ms/step - loss: 2.2767
Epoch 3/1000
13/13 [=====] - 0s 1ms/step - loss: 1.9988
Epoch 4/1000
13/13 [=====] - 0s 2ms/step - loss: 1.6435
Epoch 5/1000
13/13 [=====] - 0s 1ms/step - loss: 1.5451
Epoch 6/1000
13/13 [=====] - 0s 1ms/step - loss: 1.4922
Epoch 7/1000
13/13 [=====] - 0s 1ms/step - loss: 1.4308
Epoch 8/1000
13/13 [=====] - 0s 1ms/step - loss: 1.4025
Epoch 9/1000
13/13 [=====] - 0s 2ms/step - loss: 1.3771
Epoch 10/1000
13/13 [=====] - 0s 1ms/step - loss: 1.3684
Epoch 11/1000
13/13 [=====] - 0s 1ms/step - loss: 1.3365
Epoch 12/1000
13/13 [=====] - 0s 1ms/step - loss: 1.3280
Epoch 13/1000
13/13 [=====] - 0s 1ms/step - loss: 1.3544
Epoch 14/1000
13/13 [=====] - 0s 1ms/step - loss: 1.3118
Epoch 15/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2851
Epoch 16/1000
13/13 [=====] - 0s 2ms/step - loss: 1.3038
Epoch 17/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2855
Epoch 18/1000
13/13 [=====] - 0s 2ms/step - loss: 1.2753
Epoch 19/1000
13/13 [=====] - 0s 2ms/step - loss: 1.2536
Epoch 20/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2525
Epoch 21/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2475
Epoch 22/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2627
Epoch 23/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2375
Epoch 24/1000
13/13 [=====] - 0s 2ms/step - loss: 1.2255
Epoch 25/1000
13/13 [=====] - 0s 2ms/step - loss: 1.2491
Epoch 26/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2655
Epoch 27/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2128
```

```
Epoch 28/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1994
Epoch 29/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1951
Epoch 30/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2034
Epoch 31/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2003
Epoch 32/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2235
Epoch 33/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1765
Epoch 34/1000
13/13 [=====] - 0s 2ms/step - loss: 1.2015
Epoch 35/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1880
Epoch 36/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1715
Epoch 37/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1692
Epoch 38/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1876
Epoch 39/1000
13/13 [=====] - 0s 2ms/step - loss: 1.1566
Epoch 40/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1980
Epoch 41/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1452
Epoch 42/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1492
Epoch 43/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1443
Epoch 44/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1412
Epoch 45/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1492
Epoch 46/1000
13/13 [=====] - 0s 1ms/step - loss: 1.2046
Epoch 47/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1676
Epoch 48/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1339
Epoch 49/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1247
Epoch 50/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1290
Epoch 51/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1424
Epoch 52/1000
13/13 [=====] - 0s 2ms/step - loss: 1.1653
Epoch 53/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1359
Epoch 54/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1210
Epoch 55/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1427
Epoch 56/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1383
Epoch 57/1000
13/13 [=====] - 0s 3ms/step - loss: 1.1251
```

```
Epoch 58/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0966
Epoch 59/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1308
Epoch 60/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1173
Epoch 61/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1572
Epoch 62/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1631
Epoch 63/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1358
Epoch 64/1000
13/13 [=====] - 0s 2ms/step - loss: 1.1139
Epoch 65/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1345
Epoch 66/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1332
Epoch 67/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1173
Epoch 68/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1006
Epoch 69/1000
13/13 [=====] - 0s 3ms/step - loss: 1.0801
Epoch 70/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0920
Epoch 71/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0896
Epoch 72/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0753
Epoch 73/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0730
Epoch 74/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0930
Epoch 75/1000
13/13 [=====] - 0s 2ms/step - loss: 1.0804
Epoch 76/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0750
Epoch 77/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0845
Epoch 78/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0652
Epoch 79/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0967
Epoch 80/1000
13/13 [=====] - 0s 1ms/step - loss: 1.1043
Epoch 81/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0724
Epoch 82/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0687
Epoch 83/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0694
Epoch 84/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0685
Epoch 85/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0618
Epoch 86/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0626
Epoch 87/1000
13/13 [=====] - 0s 2ms/step - loss: 1.1186
```

```
Epoch 88/1000
13/13 [=====] - 0s 2ms/step - loss: 1.1093
Epoch 89/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0954
Epoch 90/1000
13/13 [=====] - 0s 2ms/step - loss: 1.1025
Epoch 91/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0623
Epoch 92/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0525
Epoch 93/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0647
Epoch 94/1000
13/13 [=====] - 0s 2ms/step - loss: 1.0502
Epoch 95/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0475
Epoch 96/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0501
Epoch 97/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0369
Epoch 98/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0429
Epoch 99/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0526
Epoch 100/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0454
Epoch 101/1000
13/13 [=====] - 0s 2ms/step - loss: 1.0738
Epoch 102/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0424
Epoch 103/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0167
Epoch 104/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0194
Epoch 105/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9968
Epoch 106/1000
13/13 [=====] - 0s 1ms/step - loss: 1.0019
Epoch 107/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9891
Epoch 108/1000
13/13 [=====] - 0s 2ms/step - loss: 0.9824
Epoch 109/1000
13/13 [=====] - 0s 2ms/step - loss: 0.9914
Epoch 110/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9830
Epoch 111/1000
13/13 [=====] - 0s 1ms/step - loss: 0.9456
Epoch 112/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8884
Epoch 113/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8709
Epoch 114/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8371
Epoch 115/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8214
Epoch 116/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8417
Epoch 117/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8250
```

```
Epoch 118/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8627
Epoch 119/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8831
Epoch 120/1000
13/13 [=====] - 0s 1ms/step - loss: 0.8500
Epoch 121/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7796
Epoch 122/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7688
Epoch 123/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7738
Epoch 124/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7747
Epoch 125/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7629
Epoch 126/1000
13/13 [=====] - 0s 2ms/step - loss: 0.7856
Epoch 127/1000
13/13 [=====] - 0s 2ms/step - loss: 0.7911
Epoch 128/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7723
Epoch 129/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7390
Epoch 130/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7250
Epoch 131/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7362
Epoch 132/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7332
Epoch 133/1000
13/13 [=====] - 0s 2ms/step - loss: 0.7244
Epoch 134/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7408
Epoch 135/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7331
Epoch 136/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7242
Epoch 137/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7076
Epoch 138/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7396
Epoch 139/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7410
Epoch 140/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7149
Epoch 141/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7318
Epoch 142/1000
13/13 [=====] - 0s 2ms/step - loss: 0.7000
Epoch 143/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6995
Epoch 144/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7225
Epoch 145/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7060
Epoch 146/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7109
Epoch 147/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7361
```

```
Epoch 148/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6920
Epoch 149/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6873
Epoch 150/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6800
Epoch 151/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6764
Epoch 152/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6759
Epoch 153/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6698
Epoch 154/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6721
Epoch 155/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6642
Epoch 156/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6652
Epoch 157/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6670
Epoch 158/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6625
Epoch 159/1000
13/13 [=====] - 0s 3ms/step - loss: 0.6843
Epoch 160/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6840
Epoch 161/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6946
Epoch 162/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7123
Epoch 163/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7013
Epoch 164/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7075
Epoch 165/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6943
Epoch 166/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6746
Epoch 167/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6691
Epoch 168/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6628
Epoch 169/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6496
Epoch 170/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6517
Epoch 171/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6562
Epoch 172/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6487
Epoch 173/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6530
Epoch 174/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6452
Epoch 175/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6446
Epoch 176/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6438
Epoch 177/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6450
```



```
Epoch 178/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6373
Epoch 179/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6246
Epoch 180/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6676
Epoch 181/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6287
Epoch 182/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6334
Epoch 183/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6263
Epoch 184/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6299
Epoch 185/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6200
Epoch 186/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6409
Epoch 187/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6235
Epoch 188/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6363
Epoch 189/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6326
Epoch 190/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6330
Epoch 191/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6351
Epoch 192/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6321
Epoch 193/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6246
Epoch 194/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6152
Epoch 195/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6107
Epoch 196/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6037
Epoch 197/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6147
Epoch 198/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6094
Epoch 199/1000
13/13 [=====] - 0s 3ms/step - loss: 0.6145
Epoch 200/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6231
Epoch 201/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6394
Epoch 202/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6079
Epoch 203/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5944
Epoch 204/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6117
Epoch 205/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6586
Epoch 206/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6119
Epoch 207/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6119
```

```
Epoch 208/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6068
Epoch 209/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6228
Epoch 210/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6240
Epoch 211/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6076
Epoch 212/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6097
Epoch 213/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5960
Epoch 214/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5901
Epoch 215/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6075
Epoch 216/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6361
Epoch 217/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5952
Epoch 218/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6007
Epoch 219/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5962
Epoch 220/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5825
Epoch 221/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5826
Epoch 222/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5966
Epoch 223/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6160
Epoch 224/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6041
Epoch 225/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5811
Epoch 226/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6219
Epoch 227/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5856
Epoch 228/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5743
Epoch 229/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6105
Epoch 230/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7133
Epoch 231/1000
13/13 [=====] - 0s 1ms/step - loss: 0.7454
Epoch 232/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6850
Epoch 233/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5986
Epoch 234/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5842
Epoch 235/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5864
Epoch 236/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5932
Epoch 237/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5970
```

```
Epoch 238/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6146
Epoch 239/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6305
Epoch 240/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6060
Epoch 241/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5659
Epoch 242/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5712
Epoch 243/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5744
Epoch 244/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5694
Epoch 245/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5841
Epoch 246/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5831
Epoch 247/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5579
Epoch 248/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5745
Epoch 249/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5895
Epoch 250/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5765
Epoch 251/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6057
Epoch 252/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5956
Epoch 253/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5679
Epoch 254/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5861
Epoch 255/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5742
Epoch 256/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5725
Epoch 257/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5716
Epoch 258/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5681
Epoch 259/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5653
Epoch 260/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5924
Epoch 261/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5570
Epoch 262/1000
13/13 [=====] - 0s 1ms/step - loss: 0.6122
Epoch 263/1000
13/13 [=====] - 0s 2ms/step - loss: 0.6138
Epoch 264/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5792
Epoch 265/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5641
Epoch 266/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5931
Epoch 267/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5834
```

```
Epoch 268/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5787
Epoch 269/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5471
Epoch 270/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5450
Epoch 271/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5581
Epoch 272/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5544
Epoch 273/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5684
Epoch 274/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5466
Epoch 275/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5486
Epoch 276/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5577
Epoch 277/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5599
Epoch 278/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5501
Epoch 279/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5849
Epoch 280/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5906
Epoch 281/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5538
Epoch 282/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5479
Epoch 283/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5511
Epoch 284/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5396
Epoch 285/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5530
Epoch 286/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5624
Epoch 287/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5882
Epoch 288/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5837
Epoch 289/1000
13/13 [=====] - 0s 4ms/step - loss: 0.5533
Epoch 290/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5541
Epoch 291/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5591
Epoch 292/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5371
Epoch 293/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5473
Epoch 294/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5467
Epoch 295/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5698
Epoch 296/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5471
Epoch 297/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5399
```

```
Epoch 298/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5410
Epoch 299/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5544
Epoch 300/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5410
Epoch 301/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5395
Epoch 302/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5401
Epoch 303/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5572
Epoch 304/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5758
Epoch 305/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5409
Epoch 306/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5514
Epoch 307/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5336
Epoch 308/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5262
Epoch 309/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5401
Epoch 310/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5347
Epoch 311/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5191
Epoch 312/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5308
Epoch 313/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5415
Epoch 314/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5471
Epoch 315/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5386
Epoch 316/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5260
Epoch 317/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5223
Epoch 318/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5211
Epoch 319/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5211
Epoch 320/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5356
Epoch 321/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5321
Epoch 322/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5497
Epoch 323/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5547
Epoch 324/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5985
Epoch 325/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5776
Epoch 326/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5567
Epoch 327/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5634
```

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Epoch 328/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5437
Epoch 329/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5265
Epoch 330/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5296
Epoch 331/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5248
Epoch 332/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5342
Epoch 333/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5868
Epoch 334/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5473
Epoch 335/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5508
Epoch 336/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5624
Epoch 337/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5484
Epoch 338/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5511
Epoch 339/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5373
Epoch 340/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5107
Epoch 341/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5159
Epoch 342/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5091
Epoch 343/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5082
Epoch 344/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5097
Epoch 345/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5054
Epoch 346/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5102
Epoch 347/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5193
Epoch 348/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5382
Epoch 349/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5230
Epoch 350/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5244
Epoch 351/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5162
Epoch 352/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5203
Epoch 353/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5137
Epoch 354/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5082
Epoch 355/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5105
Epoch 356/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5035
Epoch 357/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5060
```

```
Epoch 358/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5251
Epoch 359/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5266
Epoch 360/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5174
Epoch 361/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5150
Epoch 362/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5476
Epoch 363/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5105
Epoch 364/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5056
Epoch 365/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5153
Epoch 366/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5026
Epoch 367/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5030
Epoch 368/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5205
Epoch 369/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5132
Epoch 370/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5159
Epoch 371/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5108
Epoch 372/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4991
Epoch 373/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5092
Epoch 374/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5217
Epoch 375/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5170
Epoch 376/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5313
Epoch 377/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4973
Epoch 378/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5057
Epoch 379/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5157
Epoch 380/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4905
Epoch 381/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5495
Epoch 382/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5190
Epoch 383/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5414
Epoch 384/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5017
Epoch 385/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5118
Epoch 386/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4941
Epoch 387/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5092
```

```
Epoch 388/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5181
Epoch 389/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5099
Epoch 390/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4951
Epoch 391/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5014
Epoch 392/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5029
Epoch 393/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4980
Epoch 394/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4999
Epoch 395/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5327
Epoch 396/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5404
Epoch 397/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5582
Epoch 398/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5065
Epoch 399/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5144
Epoch 400/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5132
Epoch 401/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4978
Epoch 402/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4925
Epoch 403/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4998
Epoch 404/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5176
Epoch 405/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5011
Epoch 406/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4973
Epoch 407/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5104
Epoch 408/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5243
Epoch 409/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4920
Epoch 410/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5014
Epoch 411/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5204
Epoch 412/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4899
Epoch 413/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4973
Epoch 414/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5205
Epoch 415/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5532
Epoch 416/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5525
Epoch 417/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5399
```



```
Epoch 418/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5136
Epoch 419/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4918
Epoch 420/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4805
Epoch 421/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5013
Epoch 422/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5103
Epoch 423/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5005
Epoch 424/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4827
Epoch 425/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4834
Epoch 426/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4849
Epoch 427/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5071
Epoch 428/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5030
Epoch 429/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4916
Epoch 430/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4909
Epoch 431/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4790
Epoch 432/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4808
Epoch 433/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4830
Epoch 434/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4976
Epoch 435/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4921
Epoch 436/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4914
Epoch 437/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4971
Epoch 438/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4934
Epoch 439/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4917
Epoch 440/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4736
Epoch 441/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4929
Epoch 442/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5030
Epoch 443/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4870
Epoch 444/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5361
Epoch 445/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5373
Epoch 446/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5197
Epoch 447/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5140
```

```
Epoch 448/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5171
Epoch 449/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4890
Epoch 450/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4815
Epoch 451/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4821
Epoch 452/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4876
Epoch 453/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4935
Epoch 454/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5059
Epoch 455/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5096
Epoch 456/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5066
Epoch 457/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4677
Epoch 458/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4886
Epoch 459/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4734
Epoch 460/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4805
Epoch 461/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4823
Epoch 462/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4694
Epoch 463/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4712
Epoch 464/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4878
Epoch 465/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4686
Epoch 466/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5223
Epoch 467/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4759
Epoch 468/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4988
Epoch 469/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5359
Epoch 470/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4897
Epoch 471/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4789
Epoch 472/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4992
Epoch 473/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5290
Epoch 474/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5190
Epoch 475/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4957
Epoch 476/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4764
Epoch 477/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4876
```

```
Epoch 478/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4770
Epoch 479/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5171
Epoch 480/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5182
Epoch 481/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5161
Epoch 482/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4717
Epoch 483/1000
13/13 [=====] - 0s 3ms/step - loss: 0.5209
Epoch 484/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4910
Epoch 485/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5119
Epoch 486/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4847
Epoch 487/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4780
Epoch 488/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4710
Epoch 489/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4619
Epoch 490/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4740
Epoch 491/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4829
Epoch 492/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5035
Epoch 493/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4822
Epoch 494/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4614
Epoch 495/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4688
Epoch 496/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4841
Epoch 497/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5751
Epoch 498/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5173
Epoch 499/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4800
Epoch 500/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4956
Epoch 501/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4616
Epoch 502/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4734
Epoch 503/1000
13/13 [=====] - 0s 1000us/step - loss: 0.4910
Epoch 504/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5166
Epoch 505/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4999
Epoch 506/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5061
Epoch 507/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5193
```

```
Epoch 508/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4842
Epoch 509/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4732
Epoch 510/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4649
Epoch 511/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4842
Epoch 512/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4655
Epoch 513/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4665
Epoch 514/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4816
Epoch 515/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4742
Epoch 516/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4719
Epoch 517/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4695
Epoch 518/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4623
Epoch 519/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4620
Epoch 520/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4770
Epoch 521/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5071
Epoch 522/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4805
Epoch 523/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4970
Epoch 524/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4755
Epoch 525/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4824
Epoch 526/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4887
Epoch 527/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4546
Epoch 528/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4590
Epoch 529/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4920
Epoch 530/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4788
Epoch 531/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4912
Epoch 532/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4672
Epoch 533/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4561
Epoch 534/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4672
Epoch 535/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4783
Epoch 536/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4469
Epoch 537/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5006
```

```
Epoch 538/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4679
Epoch 539/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4526
Epoch 540/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4665
Epoch 541/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5305
Epoch 542/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4654
Epoch 543/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4793
Epoch 544/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4972
Epoch 545/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4504
Epoch 546/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4541
Epoch 547/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4764
Epoch 548/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4560
Epoch 549/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4651
Epoch 550/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4655
Epoch 551/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4743
Epoch 552/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4673
Epoch 553/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4568
Epoch 554/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4576
Epoch 555/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4953
Epoch 556/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4914
Epoch 557/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4707
Epoch 558/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4570
Epoch 559/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4826
Epoch 560/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4800
Epoch 561/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4515
Epoch 562/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4567
Epoch 563/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4501
Epoch 564/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4754
Epoch 565/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4696
Epoch 566/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4740
Epoch 567/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4666
```

```
Epoch 568/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4750
Epoch 569/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5003
Epoch 570/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4560
Epoch 571/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4615
Epoch 572/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4728
Epoch 573/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4630
Epoch 574/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4709
Epoch 575/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4936
Epoch 576/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4502
Epoch 577/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4461
Epoch 578/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5455
Epoch 579/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4886
Epoch 580/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4671
Epoch 581/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5001
Epoch 582/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4855
Epoch 583/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4819
Epoch 584/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4613
Epoch 585/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4855
Epoch 586/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5111
Epoch 587/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5116
Epoch 588/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4575
Epoch 589/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4386
Epoch 590/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4385
Epoch 591/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4512
Epoch 592/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4474
Epoch 593/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4558
Epoch 594/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4589
Epoch 595/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5097
Epoch 596/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4788
Epoch 597/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4441
```

```
Epoch 598/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4441
Epoch 599/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4439
Epoch 600/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4627
Epoch 601/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4396
Epoch 602/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4478
Epoch 603/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4462
Epoch 604/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4522
Epoch 605/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4576
Epoch 606/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4880
Epoch 607/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4655
Epoch 608/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4738
Epoch 609/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4453
Epoch 610/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4739
Epoch 611/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4516
Epoch 612/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4757
Epoch 613/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4515
Epoch 614/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4528
Epoch 615/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4672
Epoch 616/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5131
Epoch 617/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4658
Epoch 618/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4648
Epoch 619/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5144
Epoch 620/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4811
Epoch 621/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4681
Epoch 622/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4628
Epoch 623/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4594
Epoch 624/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4494
Epoch 625/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4412
Epoch 626/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4549
Epoch 627/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4447
```

```
Epoch 628/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4657
Epoch 629/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4624
Epoch 630/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4588
Epoch 631/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4739
Epoch 632/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4661
Epoch 633/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4494
Epoch 634/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4808
Epoch 635/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4399
Epoch 636/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4546
Epoch 637/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4330
Epoch 638/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4407
Epoch 639/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4422
Epoch 640/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4916
Epoch 641/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4589
Epoch 642/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4956
Epoch 643/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5137
Epoch 644/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4703
Epoch 645/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5082
Epoch 646/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4910
Epoch 647/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4312
Epoch 648/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4524
Epoch 649/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4473
Epoch 650/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4510
Epoch 651/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4472
Epoch 652/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4323
Epoch 653/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4455
Epoch 654/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4531
Epoch 655/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4454
Epoch 656/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4409
Epoch 657/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4523
```



```
Epoch 658/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4317
Epoch 659/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4318
Epoch 660/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4512
Epoch 661/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4306
Epoch 662/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4371
Epoch 663/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4706
Epoch 664/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4666
Epoch 665/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4418
Epoch 666/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4664
Epoch 667/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4591
Epoch 668/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4421
Epoch 669/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4554
Epoch 670/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4434
Epoch 671/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4418
Epoch 672/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4415
Epoch 673/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4333
Epoch 674/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4548
Epoch 675/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4489
Epoch 676/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4444
Epoch 677/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4509
Epoch 678/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4392
Epoch 679/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4478
Epoch 680/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4386
Epoch 681/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4642
Epoch 682/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4466
Epoch 683/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4458
Epoch 684/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4479
Epoch 685/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4545
Epoch 686/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4447
Epoch 687/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4377
```

```
Epoch 688/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4239
Epoch 689/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4717
Epoch 690/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4657
Epoch 691/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4542
Epoch 692/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4465
Epoch 693/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4246
Epoch 694/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4325
Epoch 695/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4352
Epoch 696/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4334
Epoch 697/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4451
Epoch 698/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4691
Epoch 699/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4364
Epoch 700/1000
13/13 [=====] - 0s 3ms/step - loss: 0.4242
Epoch 701/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4365
Epoch 702/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4460
Epoch 703/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4229
Epoch 704/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4471
Epoch 705/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4405
Epoch 706/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4430
Epoch 707/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4573
Epoch 708/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4579
Epoch 709/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4708
Epoch 710/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4633
Epoch 711/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4568
Epoch 712/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4926
Epoch 713/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4482
Epoch 714/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4481
Epoch 715/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4261
Epoch 716/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4194
Epoch 717/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4387
```

```
Epoch 718/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4331
Epoch 719/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4609
Epoch 720/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4588
Epoch 721/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4469
Epoch 722/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4314
Epoch 723/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4362
Epoch 724/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4309
Epoch 725/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4409
Epoch 726/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4526
Epoch 727/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4473
Epoch 728/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4685
Epoch 729/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4262
Epoch 730/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4458
Epoch 731/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4468
Epoch 732/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4231
Epoch 733/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4312
Epoch 734/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4530
Epoch 735/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4194
Epoch 736/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4284
Epoch 737/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4312
Epoch 738/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4667
Epoch 739/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4615
Epoch 740/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4339
Epoch 741/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4721
Epoch 742/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5260
Epoch 743/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4555
Epoch 744/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4632
Epoch 745/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4472
Epoch 746/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4381
Epoch 747/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4257
```

```
Epoch 748/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4310
Epoch 749/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5160
Epoch 750/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4597
Epoch 751/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4250
Epoch 752/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4992
Epoch 753/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5019
Epoch 754/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4542
Epoch 755/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4698
Epoch 756/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4750
Epoch 757/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4838
Epoch 758/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4971
Epoch 759/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4768
Epoch 760/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5083
Epoch 761/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5051
Epoch 762/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4660
Epoch 763/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4427
Epoch 764/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4544
Epoch 765/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4431
Epoch 766/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4286
Epoch 767/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4335
Epoch 768/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4416
Epoch 769/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4529
Epoch 770/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4617
Epoch 771/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4373
Epoch 772/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4300
Epoch 773/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4440
Epoch 774/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4860
Epoch 775/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4617
Epoch 776/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4306
Epoch 777/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4629
```

```
Epoch 778/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4519
Epoch 779/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4475
Epoch 780/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4527
Epoch 781/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4563
Epoch 782/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4231
Epoch 783/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4321
Epoch 784/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4301
Epoch 785/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4162
Epoch 786/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4249
Epoch 787/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4326
Epoch 788/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4178
Epoch 789/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4318
Epoch 790/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4601
Epoch 791/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4560
Epoch 792/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4918
Epoch 793/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4656
Epoch 794/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4909
Epoch 795/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5096
Epoch 796/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4869
Epoch 797/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4287
Epoch 798/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4380
Epoch 799/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4288
Epoch 800/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4274
Epoch 801/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4172
Epoch 802/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4122
Epoch 803/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4122
Epoch 804/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4098
Epoch 805/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4230
Epoch 806/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4273
Epoch 807/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4172
```

```
Epoch 808/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4321
Epoch 809/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4650
Epoch 810/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4199
Epoch 811/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4131
Epoch 812/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4162
Epoch 813/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4231
Epoch 814/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4441
Epoch 815/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4437
Epoch 816/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4354
Epoch 817/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4409
Epoch 818/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4271
Epoch 819/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4430
Epoch 820/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4724
Epoch 821/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4460
Epoch 822/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4459
Epoch 823/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4459
Epoch 824/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4469
Epoch 825/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4178
Epoch 826/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4311
Epoch 827/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4178
Epoch 828/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4273
Epoch 829/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4627
Epoch 830/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4488
Epoch 831/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4228
Epoch 832/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4169
Epoch 833/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4106
Epoch 834/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4196
Epoch 835/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4390
Epoch 836/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4550
Epoch 837/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4407
```

```
Epoch 838/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4450
Epoch 839/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4285
Epoch 840/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5074
Epoch 841/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5059
Epoch 842/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4255
Epoch 843/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4401
Epoch 844/1000
13/13 [=====] - 0s 3ms/step - loss: 0.4335
Epoch 845/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4210
Epoch 846/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4376
Epoch 847/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4505
Epoch 848/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4238
Epoch 849/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4408
Epoch 850/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4491
Epoch 851/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4450
Epoch 852/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4358
Epoch 853/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4458
Epoch 854/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4292
Epoch 855/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4177
Epoch 856/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4189
Epoch 857/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4200
Epoch 858/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4235
Epoch 859/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4725
Epoch 860/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4191
Epoch 861/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4478
Epoch 862/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4493
Epoch 863/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4092
Epoch 864/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4568
Epoch 865/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4655
Epoch 866/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4165
Epoch 867/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4316
```

```
Epoch 868/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4209
Epoch 869/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4161
Epoch 870/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4487
Epoch 871/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4355
Epoch 872/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4040
Epoch 873/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4038
Epoch 874/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4133
Epoch 875/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4159
Epoch 876/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4303
Epoch 877/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4125
Epoch 878/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4196
Epoch 879/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4172
Epoch 880/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4234
Epoch 881/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4440
Epoch 882/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4547
Epoch 883/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4838
Epoch 884/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4636
Epoch 885/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4457
Epoch 886/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4050
Epoch 887/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4478
Epoch 888/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4398
Epoch 889/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4412
Epoch 890/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4372
Epoch 891/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4180
Epoch 892/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4350
Epoch 893/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4550
Epoch 894/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4235
Epoch 895/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4471
Epoch 896/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4118
Epoch 897/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4288
```



```
Epoch 898/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4335
Epoch 899/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4401
Epoch 900/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4279
Epoch 901/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4334
Epoch 902/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4306
Epoch 903/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4422
Epoch 904/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4077
Epoch 905/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4160
Epoch 906/1000
13/13 [=====] - 0s 3ms/step - loss: 0.4257
Epoch 907/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4362
Epoch 908/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4314
Epoch 909/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4698
Epoch 910/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4313
Epoch 911/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4364
Epoch 912/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4374
Epoch 913/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4171
Epoch 914/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4331
Epoch 915/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4145
Epoch 916/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4009
Epoch 917/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4138
Epoch 918/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4033
Epoch 919/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4162
Epoch 920/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4607
Epoch 921/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4504
Epoch 922/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4412
Epoch 923/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4550
Epoch 924/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4971
Epoch 925/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4428
Epoch 926/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4539
Epoch 927/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4629
```

```
Epoch 928/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4130
Epoch 929/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4114
Epoch 930/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4599
Epoch 931/1000
13/13 [=====] - 0s 2ms/step - loss: 0.5198
Epoch 932/1000
13/13 [=====] - 0s 1ms/step - loss: 0.5207
Epoch 933/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4596
Epoch 934/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4598
Epoch 935/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4298
Epoch 936/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4263
Epoch 937/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4116
Epoch 938/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4293
Epoch 939/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4277
Epoch 940/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4111
Epoch 941/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4034
Epoch 942/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3983
Epoch 943/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4126
Epoch 944/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4363
Epoch 945/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4200
Epoch 946/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4127
Epoch 947/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4392
Epoch 948/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4329
Epoch 949/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4085
Epoch 950/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4093
Epoch 951/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4063
Epoch 952/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4094
Epoch 953/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4174
Epoch 954/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4313
Epoch 955/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4201
Epoch 956/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4683
Epoch 957/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4952
```

```
Epoch 958/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4556
Epoch 959/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4175
Epoch 960/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4007
Epoch 961/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4185
Epoch 962/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4022
Epoch 963/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4124
Epoch 964/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4032
Epoch 965/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4095
Epoch 966/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4193
Epoch 967/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4131
Epoch 968/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4260
Epoch 969/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4410
Epoch 970/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4275
Epoch 971/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4381
Epoch 972/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4385
Epoch 973/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4125
Epoch 974/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4137
Epoch 975/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4076
Epoch 976/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4092
Epoch 977/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4120
Epoch 978/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4051
Epoch 979/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4196
Epoch 980/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4426
Epoch 981/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4337
Epoch 982/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4311
Epoch 983/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4055
Epoch 984/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4171
Epoch 985/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4110
Epoch 986/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4046
Epoch 987/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4295
```

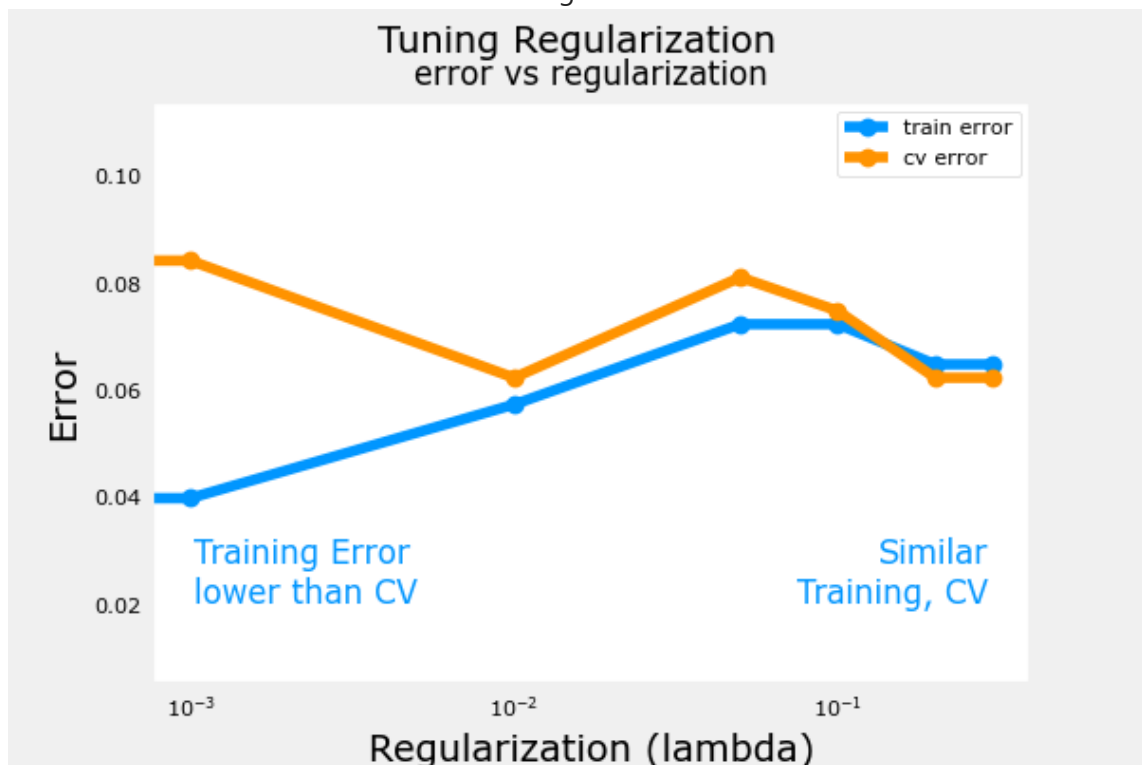
```

Epoch 988/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4012
Epoch 989/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4073
Epoch 990/1000
13/13 [=====] - 0s 1ms/step - loss: 0.3943
Epoch 991/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4159
Epoch 992/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4011
Epoch 993/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4112
Epoch 994/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4503
Epoch 995/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4251
Epoch 996/1000
13/13 [=====] - 0s 2ms/step - loss: 0.4083
Epoch 997/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4341
Epoch 998/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4077
Epoch 999/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4247
Epoch 1000/1000
13/13 [=====] - 0s 1ms/step - loss: 0.4559
Finished lambda = 0.3

```

```
In [ ]: plot_iterate(lambdas, models, X_train, y_train, X_cv, y_cv)
```

Figure



As regularization is increased, the performance of the model on the training and cross-validation data sets converge. For this data set and model, $\lambda > 0.01$ seems to be a reasonable choice.

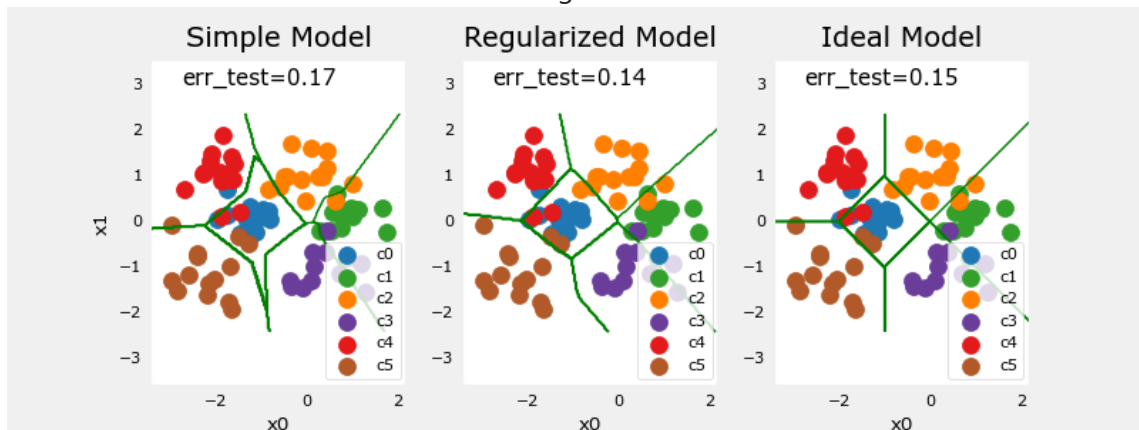
7.1 Test

Let's try our optimized models on the test set and compare them to 'ideal' performance.

```
In [ ]: plt_compare(X_test,y_test, classes, model_predict_s, model_predict_r, centers)
```

```
1050/1050 [=====] - 1s 859us/step
1050/1050 [=====] - 1s 811us/step
3/3 [=====] - 0s 1ms/step
3/3 [=====] - 0s 2ms/step
```

Figure



Our test set is small and seems to have a number of outliers so classification error is high. However, the performance of our optimized models is comparable to ideal performance.

Congratulations!

You have become familiar with important tools to apply when evaluating your machine learning models. Namely:

- splitting data into trained and untrained sets allows you to differentiate between underfitting and overfitting
- creating three data sets, Training, Cross-Validation and Test allows you to
 - train your parameters W, B with the training set
 - tune model parameters such as complexity, regularization and number of examples with the cross-validation set
 - evaluate your 'real world' performance using the test set.
- comparing training vs cross-validation performance provides insight into a model's propensity towards overfitting (high variance) or underfitting (high bias)

► **Please click [here](#) if you want to experiment with any of the non-graded code.**