1. import Library

In [1]:
```
import tensorflow as tf
import numpy as np
from tensorflow.keras import Sequential # AI Model 생성
from tensorflow.keras.layers import Dense
```

In [19]:
```
# model = Sequential()
# model.add(Dense(units = 1, input_shape = [1]))

model = Sequential([Dense(units = 1, input_shape = [1])])
```

In [20]:
```
model.summary()
```

Model: "sequential_10"

Layer (type)	Output Shape
dense_10 (Dense)	(None, 1)

Total params: 2 (8.00 B)
Trainable params: 2 (8.00 B)
Non-trainable params: 0 (0.00 B)

In [22]:
```
model.compile(optimizer='sgd', loss='mean_squared_error') # 예측하는 프로그램이드
```

In [35]:
```
xs = np.array([1, 2, 3, 4, 5])
ys = np.array([10, 20, 30, 40, 50])
```

In [36]:
```
model.fit(xs, ys, epochs=500)
```

```
Epoch 1/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0196
Epoch 2/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0194
Epoch 3/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0193
Epoch 4/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 62ms/step - loss: 0.0192
Epoch 5/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0190
Epoch 6/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 28ms/step - loss: 0.0189
Epoch 7/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0188
Epoch 8/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0187
Epoch 9/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0185
Epoch 10/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0184
Epoch 11/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0183
Epoch 12/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0182
Epoch 13/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0180
Epoch 14/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0179
Epoch 15/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0178
Epoch 16/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0177
Epoch 17/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0176
Epoch 18/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 29ms/step - loss: 0.0174
Epoch 19/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0173
Epoch 20/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0172
Epoch 21/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0171
Epoch 22/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 91ms/step - loss: 0.0170
Epoch 23/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 30ms/step - loss: 0.0169
Epoch 24/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0167
Epoch 25/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0166
Epoch 26/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0165
Epoch 27/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0164
Epoch 28/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0163
Epoch 29/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0162
Epoch 30/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0161
```

```
Epoch 31/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0160
Epoch 32/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0159
Epoch 33/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 28ms/step - loss: 0.0158
Epoch 34/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 28ms/step - loss: 0.0156
Epoch 35/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0155
Epoch 36/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0154
Epoch 37/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0153
Epoch 38/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 29ms/step - loss: 0.0152
Epoch 39/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0151
Epoch 40/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0150
Epoch 41/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0149
Epoch 42/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 28ms/step - loss: 0.0148
Epoch 43/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0147
Epoch 44/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 28ms/step - loss: 0.0146
Epoch 45/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 61ms/step - loss: 0.0145
Epoch 46/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0144
Epoch 47/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0143
Epoch 48/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 30ms/step - loss: 0.0142
Epoch 49/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 28ms/step - loss: 0.0141
Epoch 50/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 100ms/step - loss: 0.0140
Epoch 51/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 28ms/step - loss: 0.0139
Epoch 52/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 30ms/step - loss: 0.0139
Epoch 53/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0138
Epoch 54/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 28ms/step - loss: 0.0137
Epoch 55/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0136
Epoch 56/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 30ms/step - loss: 0.0135
Epoch 57/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0134
Epoch 58/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0133
Epoch 59/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0132
Epoch 60/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0131
```

```
Epoch 61/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0130
Epoch 62/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0129
Epoch 63/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0129
Epoch 64/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0128
Epoch 65/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0127
Epoch 66/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0126
Epoch 67/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0125
Epoch 68/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0124
Epoch 69/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0123
Epoch 70/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 124ms/step - loss: 0.0123
Epoch 71/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 36ms/step - loss: 0.0122
Epoch 72/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 33ms/step - loss: 0.0121
Epoch 73/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 67ms/step - loss: 0.0120
Epoch 74/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 28ms/step - loss: 0.0119
Epoch 75/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 31ms/step - loss: 0.0119
Epoch 76/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 63ms/step - loss: 0.0118
Epoch 77/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 66ms/step - loss: 0.0117
Epoch 78/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 31ms/step - loss: 0.0116
Epoch 79/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 60ms/step - loss: 0.0115
Epoch 80/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0115
Epoch 81/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 63ms/step - loss: 0.0114
Epoch 82/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0113
Epoch 83/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 61ms/step - loss: 0.0112
Epoch 84/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0112
Epoch 85/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0111
Epoch 86/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0110
Epoch 87/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 92ms/step - loss: 0.0109
Epoch 88/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0109
Epoch 89/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0108
Epoch 90/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 63ms/step - loss: 0.0107
```

```
Epoch 91/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0106
Epoch 92/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0106
Epoch 93/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0105
Epoch 94/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0104
Epoch 95/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0104
Epoch 96/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0103
Epoch 97/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0102
Epoch 98/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0101
Epoch 99/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0101
Epoch 100/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0100
Epoch 101/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0099
Epoch 102/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0099
Epoch 103/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0098
Epoch 104/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0097
Epoch 105/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0097
Epoch 106/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 105ms/step - loss: 0.0096
Epoch 107/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 34ms/step - loss: 0.0095
Epoch 108/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 28ms/step - loss: 0.0095
Epoch 109/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0094
Epoch 110/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0094
Epoch 111/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0093
Epoch 112/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 62ms/step - loss: 0.0092
Epoch 113/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0092
Epoch 114/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0091
Epoch 115/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0090
Epoch 116/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0090
Epoch 117/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0089
Epoch 118/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0089
Epoch 119/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0088
Epoch 120/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0087
```

```
Epoch 121/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0087
Epoch 122/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0086
Epoch 123/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0086
Epoch 124/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 95ms/step - loss: 0.0085
Epoch 125/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 38ms/step - loss: 0.0084
Epoch 126/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0084
Epoch 127/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0083
Epoch 128/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0083
Epoch 129/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0082
Epoch 130/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0082
Epoch 131/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0081
Epoch 132/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0081
Epoch 133/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0080
Epoch 134/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0079
Epoch 135/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0079
Epoch 136/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0078
Epoch 137/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0078
Epoch 138/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 62ms/step - loss: 0.0077
Epoch 139/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0077
Epoch 140/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0076
Epoch 141/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0076
Epoch 142/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0075
Epoch 143/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0075
Epoch 144/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0074
Epoch 145/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0074
Epoch 146/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0073
Epoch 147/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0073
Epoch 148/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0072
Epoch 149/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0072
Epoch 150/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0071
```

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Epoch 151/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0071
Epoch 152/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0070
Epoch 153/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0070
Epoch 154/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0069
Epoch 155/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0069
Epoch 156/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0068
Epoch 157/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 64ms/step - loss: 0.0068
Epoch 158/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0068
Epoch 159/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0067
Epoch 160/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 26ms/step - loss: 0.0067
Epoch 161/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0066
Epoch 162/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0066
Epoch 163/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0065
Epoch 164/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0065
Epoch 165/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 62ms/step - loss: 0.0064
Epoch 166/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0064
Epoch 167/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 29ms/step - loss: 0.0064
Epoch 168/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 62ms/step - loss: 0.0063
Epoch 169/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 27ms/step - loss: 0.0063
Epoch 170/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0062
Epoch 171/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0062
Epoch 172/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0061
Epoch 173/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 60ms/step - loss: 0.0061
Epoch 174/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0061
Epoch 175/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0060
Epoch 176/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0060
Epoch 177/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0059
Epoch 178/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0059
Epoch 179/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0059
Epoch 180/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0058
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Epoch 181/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 64ms/step - loss: 0.0058
Epoch 182/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0057
Epoch 183/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0057
Epoch 184/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0057
Epoch 185/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0056
Epoch 186/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 63ms/step - loss: 0.0056
Epoch 187/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0056
Epoch 188/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0055
Epoch 189/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0055
Epoch 190/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0054
Epoch 191/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0054
Epoch 192/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0054
Epoch 193/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0053
Epoch 194/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0053
Epoch 195/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0053
Epoch 196/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0052
Epoch 197/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0052
Epoch 198/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0052
Epoch 199/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0051
Epoch 200/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0051
Epoch 201/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0050
Epoch 202/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0050
Epoch 203/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0050
Epoch 204/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0049
Epoch 205/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0049
Epoch 206/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0049
Epoch 207/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0048
Epoch 208/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 62ms/step - loss: 0.0048
Epoch 209/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0048
Epoch 210/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0048
```

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Epoch 211/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0047
Epoch 212/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0047
Epoch 213/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0047
Epoch 214/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0046
Epoch 215/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0046
Epoch 216/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0046
Epoch 217/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0045
Epoch 218/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0045
Epoch 219/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0045
Epoch 220/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0044
Epoch 221/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0044
Epoch 222/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0044
Epoch 223/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0043
Epoch 224/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0043
Epoch 225/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0043
Epoch 226/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0043
Epoch 227/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0042
Epoch 228/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0042
Epoch 229/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0042
Epoch 230/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0041
Epoch 231/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0041
Epoch 232/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0041
Epoch 233/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0041
Epoch 234/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0040
Epoch 235/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0040
Epoch 236/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 64ms/step - loss: 0.0040
Epoch 237/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0040
Epoch 238/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0039
Epoch 239/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0039
Epoch 240/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0039
```

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Epoch 241/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0039
Epoch 242/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0038
Epoch 243/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0038
Epoch 244/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0038
Epoch 245/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0037
Epoch 246/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0037
Epoch 247/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 62ms/step - loss: 0.0037
Epoch 248/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0037
Epoch 249/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0036
Epoch 250/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0036
Epoch 251/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0036
Epoch 252/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0036
Epoch 253/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0036
Epoch 254/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0035
Epoch 255/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0035
Epoch 256/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0035
Epoch 257/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 61ms/step - loss: 0.0035
Epoch 258/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0034
Epoch 259/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0034
Epoch 260/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0034
Epoch 261/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0034
Epoch 262/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0033
Epoch 263/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0033
Epoch 264/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0033
Epoch 265/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0033
Epoch 266/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0033
Epoch 267/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0032
Epoch 268/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 63ms/step - loss: 0.0032
Epoch 269/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0032
Epoch 270/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0032
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Epoch 271/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0031
Epoch 272/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0031
Epoch 273/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0031
Epoch 274/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0031
Epoch 275/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0031
Epoch 276/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0030
Epoch 277/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0030
Epoch 278/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0030
Epoch 279/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0030
Epoch 280/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0030
Epoch 281/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0029
Epoch 282/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0029
Epoch 283/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0029
Epoch 284/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0029
Epoch 285/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0029
Epoch 286/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0028
Epoch 287/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0028
Epoch 288/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0028
Epoch 289/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0028
Epoch 290/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0028
Epoch 291/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0027
Epoch 292/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0027
Epoch 293/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0027
Epoch 294/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0027
Epoch 295/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0027
Epoch 296/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0027
Epoch 297/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0026
Epoch 298/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0026
Epoch 299/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0026
Epoch 300/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0026
```

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Epoch 301/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0026
Epoch 302/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0025
Epoch 303/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0025
Epoch 304/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0025
Epoch 305/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 64ms/step - loss: 0.0025
Epoch 306/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0025
Epoch 307/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0025
Epoch 308/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0024
Epoch 309/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0024
Epoch 310/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0024
Epoch 311/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0024
Epoch 312/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0024
Epoch 313/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0024
Epoch 314/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0023
Epoch 315/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0023
Epoch 316/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0023
Epoch 317/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0023
Epoch 318/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0023
Epoch 319/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0023
Epoch 320/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0023
Epoch 321/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0022
Epoch 322/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0022
Epoch 323/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0022
Epoch 324/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0022
Epoch 325/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0022
Epoch 326/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0022
Epoch 327/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0022
Epoch 328/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0021
Epoch 329/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0021
Epoch 330/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0021
```

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Epoch 331/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0021
Epoch 332/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0021
Epoch 333/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0021
Epoch 334/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0021
Epoch 335/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 62ms/step - loss: 0.0020
Epoch 336/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 0.0020
Epoch 337/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 62ms/step - loss: 0.0020
Epoch 338/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0020
Epoch 339/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0020
Epoch 340/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0020
Epoch 341/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0020
Epoch 342/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0019
Epoch 343/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0019
Epoch 344/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0019
Epoch 345/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0019
Epoch 346/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0019
Epoch 347/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0019
Epoch 348/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0019
Epoch 349/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0019
Epoch 350/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0018
Epoch 351/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0018
Epoch 352/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0018
Epoch 353/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0018
Epoch 354/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0018
Epoch 355/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0018
Epoch 356/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0018
Epoch 357/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0018
Epoch 358/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0017
Epoch 359/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0017
Epoch 360/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0017
```

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Epoch 361/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0017
Epoch 362/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0017
Epoch 363/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0017
Epoch 364/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0017
Epoch 365/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0017
Epoch 366/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0017
Epoch 367/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0016
Epoch 368/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0016
Epoch 369/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0016
Epoch 370/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0016
Epoch 371/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0016
Epoch 372/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 63ms/step - loss: 0.0016
Epoch 373/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0016
Epoch 374/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0016
Epoch 375/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 35ms/step - loss: 0.0016
Epoch 376/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0015
Epoch 377/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0015
Epoch 378/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0015
Epoch 379/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0015
Epoch 380/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0015
Epoch 381/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0015
Epoch 382/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0015
Epoch 383/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0015
Epoch 384/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0015
Epoch 385/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0015
Epoch 386/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0014
Epoch 387/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0014
Epoch 388/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0014
Epoch 389/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0014
Epoch 390/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0014
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Epoch 391/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0014
Epoch 392/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0014
Epoch 393/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0014
Epoch 394/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0014
Epoch 395/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0014
Epoch 396/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0013
Epoch 397/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0013
Epoch 398/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0013
Epoch 399/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0013
Epoch 400/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0013
Epoch 401/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0013
Epoch 402/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0013
Epoch 403/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0013
Epoch 404/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0013
Epoch 405/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0013
Epoch 406/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0013
Epoch 407/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0013
Epoch 408/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0012
Epoch 409/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0012
Epoch 410/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0012
Epoch 411/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0012
Epoch 412/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0012
Epoch 413/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0012
Epoch 414/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0012
Epoch 415/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0012
Epoch 416/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0012
Epoch 417/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0012
Epoch 418/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0012
Epoch 419/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0012
Epoch 420/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0011
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Epoch 421/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0011
Epoch 422/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0011
Epoch 423/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0011
Epoch 424/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0011
Epoch 425/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0011
Epoch 426/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0011
Epoch 427/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0011
Epoch 428/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0011
Epoch 429/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0011
Epoch 430/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0011
Epoch 431/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 0.0011
Epoch 432/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0011
Epoch 433/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0010
Epoch 434/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0010
Epoch 435/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0010
Epoch 436/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 0.0010
Epoch 437/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0010
Epoch 438/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0010
Epoch 439/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 0.0010
Epoch 440/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 0.0010
Epoch 441/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 9.9362e-04
Epoch 442/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 9.8694e-04
Epoch 443/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 9.8029e-04
Epoch 444/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 9.7367e-04
Epoch 445/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 9.6710e-04
Epoch 446/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 9.6061e-04
Epoch 447/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 9.5407e-04
Epoch 448/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 9.4761e-04
Epoch 449/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 9.4127e-04
Epoch 450/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 9.3490e-04
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Epoch 451/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 9.2854e-04
Epoch 452/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 9.2236e-04
Epoch 453/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 9.1609e-04
Epoch 454/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 9.0994e-04
Epoch 455/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 25ms/step - loss: 9.0374e-04
Epoch 456/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 8.9767e-04
Epoch 457/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 8.9159e-04
Epoch 458/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 8.8559e-04
Epoch 459/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 8.7965e-04
Epoch 460/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 8.7362e-04
Epoch 461/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 8.6778e-04
Epoch 462/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 8.6188e-04
Epoch 463/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 8.5610e-04
Epoch 464/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 8.5035e-04
Epoch 465/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 20ms/step - loss: 8.4455e-04
Epoch 466/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 8.3888e-04
Epoch 467/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 8.3319e-04
Epoch 468/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 8.2758e-04
Epoch 469/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 8.2205e-04
Epoch 470/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 8.1644e-04
Epoch 471/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 8.1094e-04
Epoch 472/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 8.0548e-04
Epoch 473/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 8.0005e-04
Epoch 474/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 7.9460e-04
Epoch 475/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 7.8924e-04
Epoch 476/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 7.8390e-04
Epoch 477/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 7.7861e-04
Epoch 478/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 7.7335e-04
Epoch 479/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 7.6816e-04
Epoch 480/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 7.6297e-04
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Epoch 481/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 7.5782e-04
Epoch 482/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 7.5266e-04
Epoch 483/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 7.4761e-04
Epoch 484/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 7.4259e-04
Epoch 485/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 7.3756e-04
Epoch 486/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 7.3257e-04
Epoch 487/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 7.2762e-04
Epoch 488/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 7.2273e-04
Epoch 489/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - loss: 7.1783e-04
Epoch 490/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 7.1299e-04
Epoch 491/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 7.0815e-04
Epoch 492/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step - loss: 7.0344e-04
Epoch 493/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 96ms/step - loss: 6.9868e-04
Epoch 494/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 6.9399e-04
Epoch 495/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 73ms/step - loss: 6.8923e-04
Epoch 496/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 6.8460e-04
Epoch 497/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 6.7996e-04
Epoch 498/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 24ms/step - loss: 6.7537e-04
Epoch 499/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 6.7081e-04
Epoch 500/500
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 23ms/step - loss: 6.6628e-04
```

Out[36]: <keras.src.callbacks.history.History at 0x163e12ae1a0>

In [38]:
```
model.predict(np.array([9.0]))# 예측
```

```
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 20ms/step
```

Out[38]: array([[89.90998]], dtype=float32)

In [39]:
```
'''
50번 학습 -> 90 입력 시 87
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 62ms/step
array([[86.84717]], dtype=float32)
'''
'''
500번 학습 -> 90 입력 시 89 -> loss: 0.0276
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step
array([[89.420204]], dtype=float32)
'''
```

Out[39]: '\n500번 학습 -> 90 입력 시 89 -> loss: 0.0276\n1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 22ms/step\narray([[89.420204]], dtype=float32)\n'

In [ ]: