In [3]:

```
import pandas as pd
import seaborn as sns
from sklearn import tree
import matplotlib.pyplot as plt
from sklearn.datasets import load_iris


from sklearn.tree import export_graphviz

from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import train_test_split

from sklearn.metrics import make_scorer, f1_score, recall_score, precision_score
from sklearn.metrics import classification_report, confusion_matrix, accuracy_score


data = load_iris()
df = pd.DataFrame(data.data, columns=data.feature_names)

print(data.feature_names)
print("\n")

df['target'] = data.target

# Split Training and Test Dataset
X_train, X_test, Y_train, Y_test = train_test_split(df[data.feature_names], df['target'], t
print(len(X_train))
print(len(X_test))

# DT = DecisionTreeClassifier()
DT = DecisionTreeClassifier(criterion="gini")

# Fit model
model = DT.fit(X_train, Y_train)


y_preds = model.predict(X_test)
print(y_preds)


print(data.feature_names)
print("\n")

fig, axes = plt.subplots(nrows = 1,ncols = 1,figsize = (8,5), dpi=500)
tree.plot_tree(DT,fontsize=7, feature_names=data.feature_names, class_names=data.target_nam

labels=[0,1,2]
cmx=confusion_matrix(Y_test,y_preds, labels)
print("\n Confustion Matrix : \n",cmx)



print("\n")
print(classification_report(Y_test, y_preds))
```

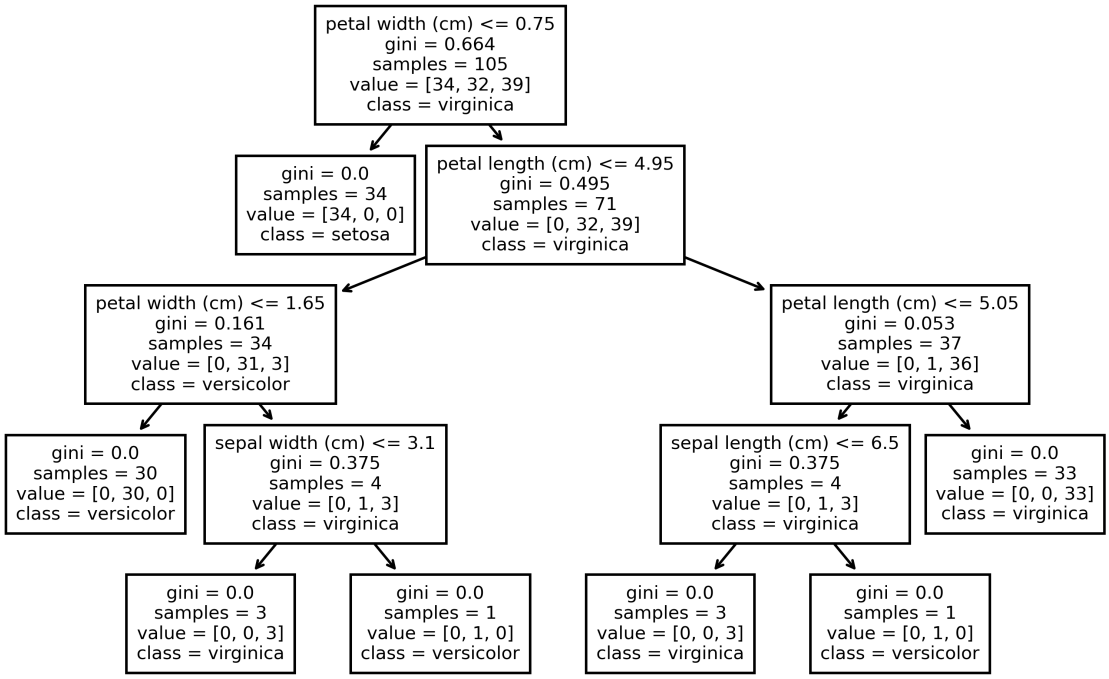
```
['sepal length (cm)', 'sepal width (cm)', 'petal length (cm)', 'petal widt
h (cm)']
```

```
105
45
[2 1 0 2 0 2 0 1 1 1 2 1 1 1 1 0 1 1 0 0 2 1 0 0 2 0 0 1 1 0 2 1 0 2 2 1 0
 2 1 1 2 0 2 0 0]
['sepal length (cm)', 'sepal width (cm)', 'petal length (cm)', 'petal widt
h (cm)']
```

```
C:\ProgramData\Anaconda3\lib\site-packages\sklearn\utils\validation.py:67: F
utureWarning: Pass labels=[0, 1, 2] as keyword args. From version 0.25 passi
ng these as positional arguments will result in an error
  warnings.warn("Pass {} as keyword args. From version 0.25 "
```

```
 Confustion Matrix :
 [[16  0  0]
 [ 0 17  1]
 [ 0  0 11]]
```

	precision	recall	f1-score	support
0	1.00	1.00	1.00	16
1	1.00	0.94	0.97	18
2	0.92	1.00	0.96	11
accuracy			0.98	45
macro avg	0.97	0.98	0.98	45
weighted avg	0.98	0.98	0.98	45



In [ ]: