In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [2]:
```
pip install pandas --timeout 300
```

```
Requirement already satisfied: pandas in c:\users\admin\anaconda3\lib\site-packages (2.2.2)
Requirement already satisfied: numpy>=1.26.0 in c:\users\admin\anaconda3\lib\site-packages (from pandas) (1.26.4)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\users\admin\anaconda3\lib\site-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in c:\users\admin\anaconda3\lib\site-packages (from pandas) (2024.1)
Requirement already satisfied: tzdata>=2022.7 in c:\users\admin\anaconda3\lib\site-packages (from pandas) (2023.3)
Requirement already satisfied: six>=1.5 in c:\users\admin\anaconda3\lib\site-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
Note: you may need to restart the kernel to use updated packages.
```

In [3]:
```
df = pd.read_csv("Sample - Superstore.csv", encoding='ISO-8859-1')
df
```

Out[3]:

	Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	Country	City	...	Postal Code	Region	Product ID	Category	Sub-Category	Product Name	Sales	Quantity
0	1	CA-2016-152156	11/8/2016	11/11/2016	Second Class	CG-12520	Claire Gute	Consumer	United States	Henderson	...	42420	South	FUR-BO-10001798	Furniture	Bookcases	Bush Somerset Collection Bookcase	261.9600	2
1	2	CA-2016-152156	11/8/2016	11/11/2016	Second Class	CG-12520	Claire Gute	Consumer	United States	Henderson	...	42420	South	FUR-CH-10000454	Furniture	Chairs	Hon Deluxe Fabric Upholstered Stacking Chairs,...	731.9400	3
2	3	CA-2016-138688	6/12/2016	6/16/2016	Second Class	DV-13045	Darrin Van Huff	Corporate	United States	Los Angeles	...	90036	West	OFF-LA-10000240	Office Supplies	Labels	Self-Adhesive Address Labels for Typewriters b...	14.6200	2
3	4	US-2015-108966	10/11/2015	10/18/2015	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States	Fort Lauderdale	...	33311	South	FUR-TA-10000577	Furniture	Tables	Bretford CR4500 Series Slim Rectangular Table	957.5775	5
4	5	US-2015-108966	10/11/2015	10/18/2015	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States	Fort Lauderdale	...	33311	South	OFF-ST-10000760	Office Supplies	Storage	Eldon Fold 'N Roll Cart System	22.3680	2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9989	9990	CA-2014-110422	1/21/2014	1/23/2014	Second Class	TB-21400	Tom Boeckenhauer	Consumer	United States	Miami	...	33180	South	FUR-FU-10001889	Furniture	Furnishings	Ultra Door Pull Handle	25.2480	3
9990	9991	CA-2017-121258	2/26/2017	3/3/2017	Standard Class	DB-13060	Dave Brooks	Consumer	United States	Costa Mesa	...	92627	West	FUR-FU-10000747	Furniture	Furnishings	Tenex B1-RE Series Chair Mats for Low Pile Car...	91.9600	2
9991	9992	CA-2017-121258	2/26/2017	3/3/2017	Standard Class	DB-13060	Dave Brooks	Consumer	United States	Costa Mesa	...	92627	West	TEC-PH-10003645	Technology	Phones	Aastra 57i VoIP phone	258.5760	2
9992	9993	CA-2017-121258	2/26/2017	3/3/2017	Standard Class	DB-13060	Dave Brooks	Consumer	United States	Costa Mesa	...	92627	West	OFF-PA-10004041	Office Supplies	Paper	It's Hot Message Books with	29.6000	4

	Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	Country	City	...	Postal Code	Region	Product ID	Category	Sub-Category	Product Name	Sales	Quantity
																	Stickers, 2 3/4" x 5"		
9993	9994	CA-2017-119914	5/4/2017	5/9/2017	Second Class	CC-12220	Chris Cortes	Consumer	United States	Westminster	...	92683	West	OFF-AP-10002684	Office Supplies	Appliances	Acco 7-Outlet Masterpiece Power Center, Wihtou...	243.1600	2

9994 rows × 21 columns

In [4]:
```
df = df.loc[:, ~df.columns.str.contains('^Unnamed')]
df.dropna(how='all', inplace=True)
```

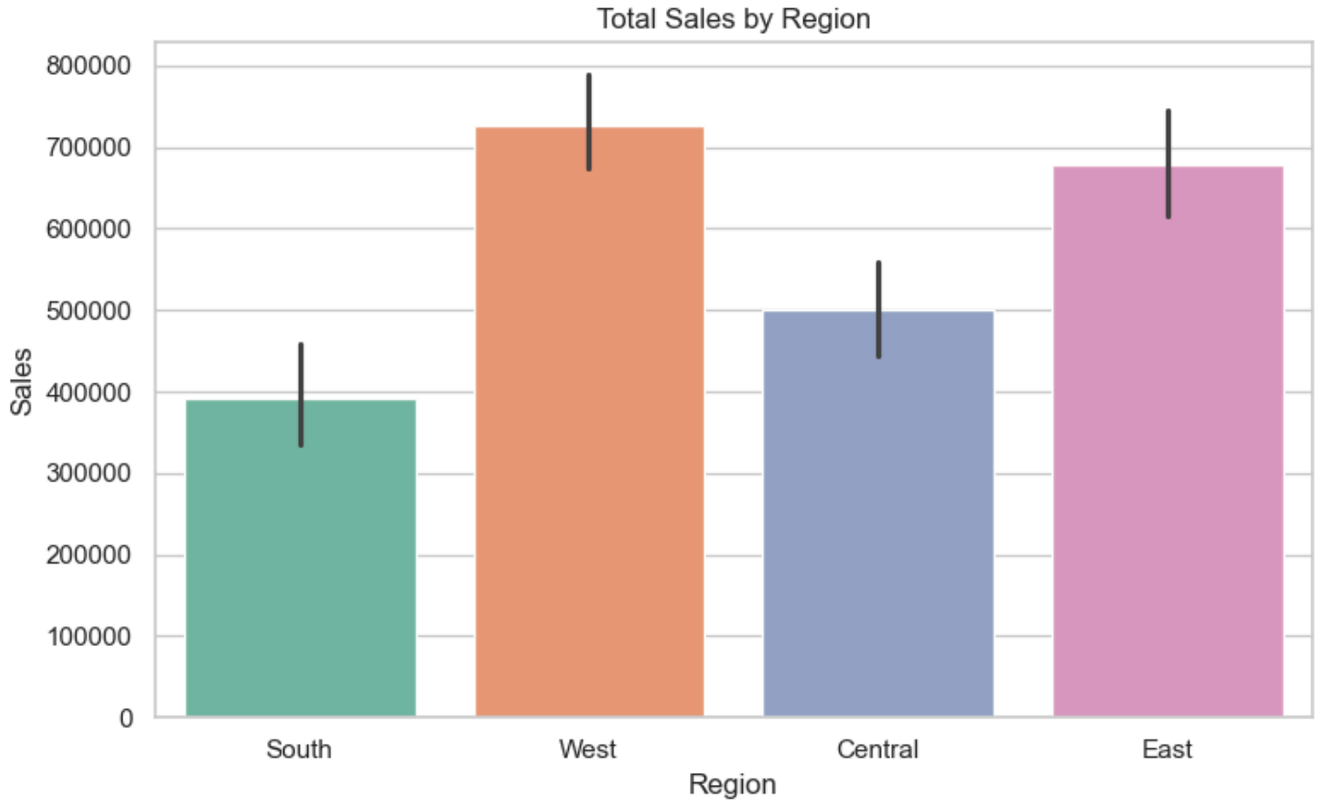
In [5]:
```
sns.set_theme(style="whitegrid")
```

In [6]:
```
print(df.columns.tolist())
```

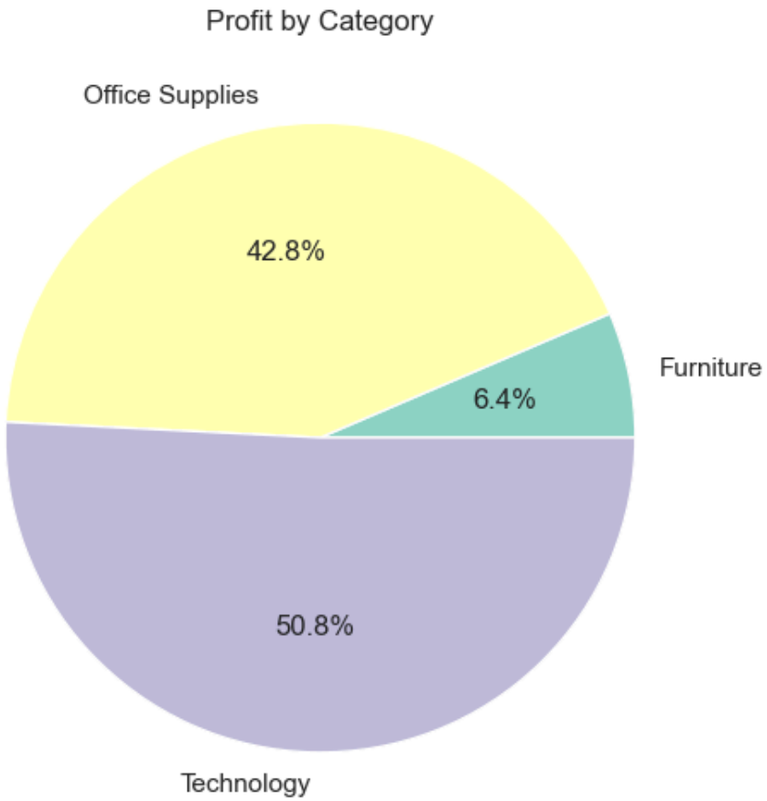
```
['Row ID', 'Order ID', 'Order Date', 'Ship Date', 'Ship Mode', 'Customer ID', 'Customer Name', 'Segment', 'Country', 'City', 'State', 'Postal Code', 'Region', 'Product ID', 'Category',
'Sub-Category', 'Product Name', 'Sales', 'Quantity', 'Discount', 'Profit']
```

In [7]:
```
plt.figure(figsize=(8, 5))
df_clean = df.dropna(subset=['Region', 'Sales'])  # should work now
sns.barplot(data=df_clean, x='Region', y='Sales', estimator=sum, palette='Set2')
plt.title('Total Sales by Region')
plt.tight_layout()
plt.show()
```

```
C:\Users\Admin\AppData\Local\Temp\ipykernel_3240\270133435.py:3: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `x` variable to `hue` and set `legend=False` for the same effect.

  sns.barplot(data=df_clean, x='Region', y='Sales', estimator=sum, palette='Set2')
```

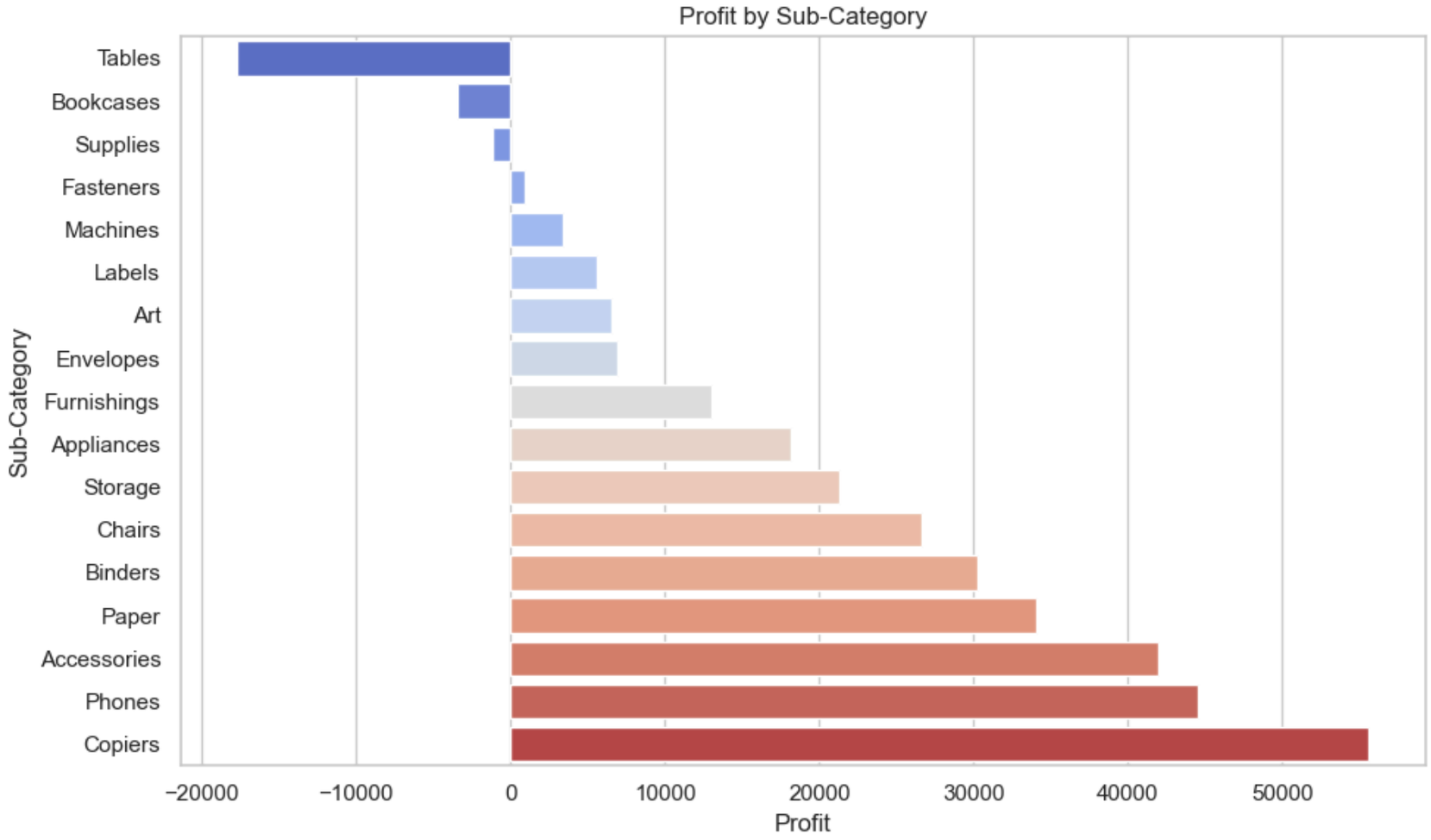


In [8]:
```
plt.figure(figsize=(6, 6))
df.groupby('Category')['Profit'].sum().plot.pie(autopct='%1.1f%%', colors=sns.color_palette('Set3'))
plt.title('Profit by Category')
plt.ylabel('')
plt.show()
```



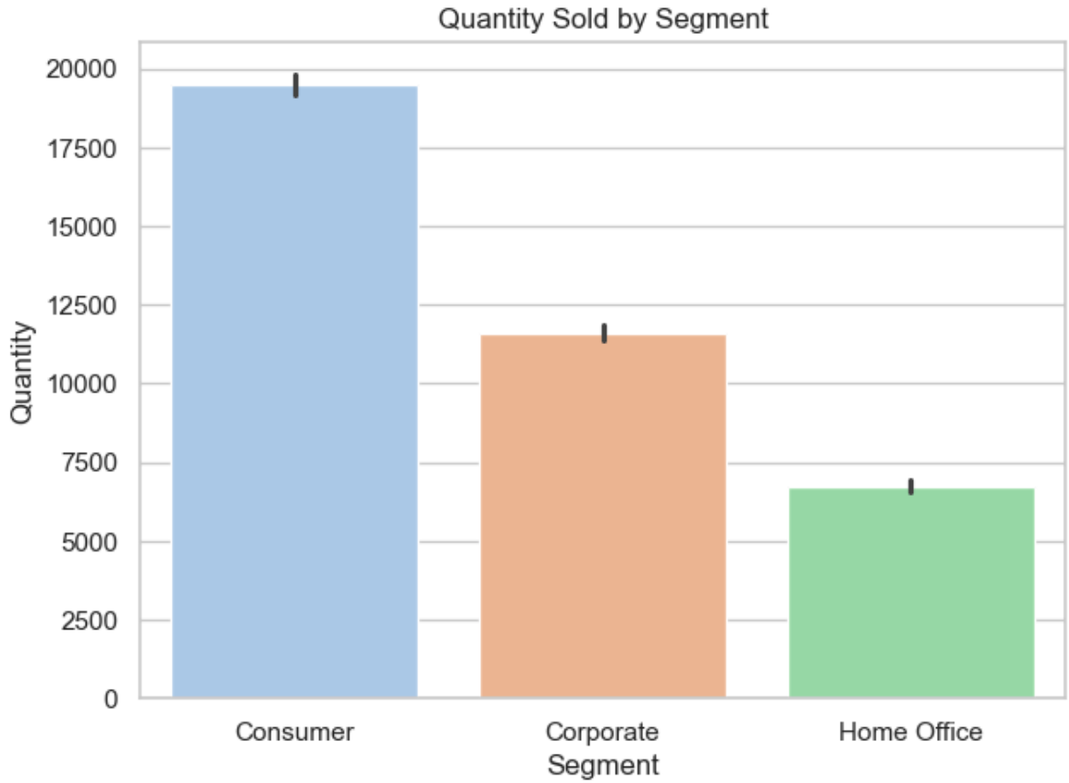
In [9]:
```
plt.figure(figsize=(10, 6))
profit_by_sub = df.groupby('Sub-Category')['Profit'].sum().sort_values()
sns.barplot(x=profit_by_sub.values, y=profit_by_sub.index, palette='coolwarm')
plt.title('Profit by Sub-Category')
plt.xlabel('Profit')
plt.tight_layout()
plt.show()
```

```
C:\Users\Admin\AppData\Local\Temp\ipykernel_3240\3738806550.py:3: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `y` variable to `hue` and set `legend=False` for the same effect.

  sns.barplot(x=profit_by_sub.values, y=profit_by_sub.index, palette='coolwarm')
```



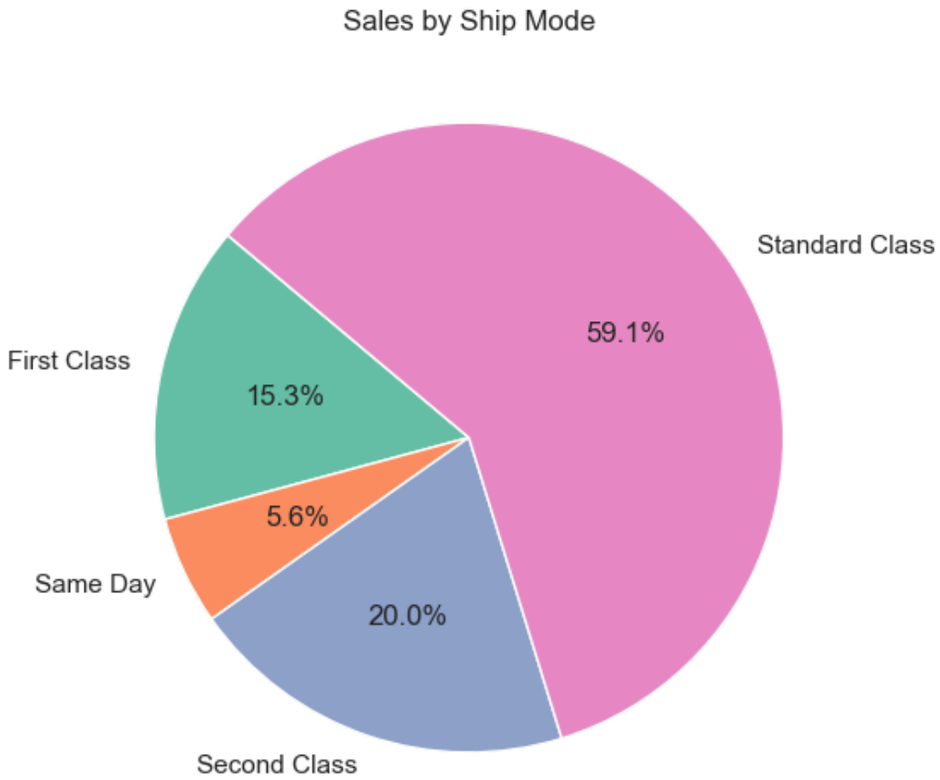
In [10]:
```
plt.figure(figsize=(7, 5))
sns.barplot(data=df, x='Segment', y='Quantity', estimator=sum, palette='pastel')
plt.title('Quantity Sold by Segment')
plt.show()
```

```
C:\Users\Admin\AppData\Local\Temp\ipykernel_3240\4175621866.py:2: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `x` variable to `hue` and set `legend=False` for the same effect.

  sns.barplot(data=df, x='Segment', y='Quantity', estimator=sum, palette='pastel')
```



In [11]:
```
plt.figure(figsize=(8, 5))
sns.scatterplot(data=df, x='Sales', y='Profit', hue='Category', palette='muted')
plt.title('Sales vs Profit by Category')
plt.tight_layout()
plt.show()
```

In [12]:
```
plt.figure(figsize=(6, 6))
df.groupby('Ship Mode')['Sales'].sum().plot.pie(autopct='%1.1f%%', startangle=140, colors=sns.color_palette('Set2'))
plt.title('Sales by Ship Mode')
plt.ylabel('')
plt.show()
```


Sales by Ship Mode
Standard Class
59.1%
First Class
15.3%
5.6%
Same Day
20.0%
Second Class

In [ ]: