In [2]:
```
import numpy as np

y = np.array([110, 140, 180, 190])
X = np.array([[180, 150], [150, 175], [170, 165], [185, 210]])
x_new = np.array([175, 170])

theta_star = np.array([-0.53731343,  1.37810945])

y_hat_new = x_new @ theta_star

residuals = y - X @ theta_star
variance = np.var(residuals)

se_y_hat = np.sqrt(variance * (x_new.T @ np.linalg.inv(X.T @ X) @ x_r

z_score = 1.96
CI_lower = y_hat_new - z_score * se_y_hat
CI_upper = y_hat_new + z_score * se_y_hat


y_hat_new, CI_lower, CI_upper
```

Out[2]: (140.24875624999999, 115.36648417182248, 165.1310283281775)

In [ ]: