Econometrics Midterm Formula Sheet

$$y = \beta_0 + \beta_1 x + u$$

$$\hat{\beta}_1 = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{\sum(x_i - \bar{x})^2}, \quad \hat{\beta}_0 = \bar{y} - \hat{\beta}_1 \bar{x}$$

$$SST = SSE + SSR$$

$$R^2 = 1 - \frac{SSR}{SST} \qquad \overline{R}^2 = 1 - \frac{SSR/(n-k-1)}{SST/(n-1)}$$

$$Var(\hat{\beta}|X) = \frac{\sigma^2}{\sum(x - \overline{x})^2}$$

$$\hat{\sigma}^2 = \frac{SSR}{n-k-1}$$

$$t = \frac{\hat{\beta}_j - \beta_{j,0}}{se(\hat{\beta}_j)}$$

$$F = \frac{(SSR_r - SSR_{ur})/q}{SSR_{ur}/(n-k-1)}$$

$$F = \frac{(R^2_{ur} - R^2_r)/q}{(1 - R^2_{ur})/(n-k-1)}$$

$$\hat{\beta}_1^{IV} = \frac{\sum z_i y_i}{\sum z_i x_i}$$