Linear: kalsdj

a) Assump1: $\mathbb{E}(u) = 0$

b) Assump2: $\mathbb{E}(u|x) = 0$

c) Assump3: $\text{var}(u_i|x_i) = \sigma^2$

d) Assump4: $\mathbb{E}(x_i'x_i)$ is full rank

Use Wald test for t-stat, Use LM for F-stat
Violation of 3 - robust s.e.
Violation of 4 - software
Violation of 1 = IV ($cov(x, u) \neq 0$)
Endogeneity solutions:

a) Joint determination

b) IV

IV $cov(x, u) \neq 0; cov(z, u) = 0$
$\mathbb{E}(zy - zx'\beta) = \mathbb{E}(zu) = 0$
$\rightarrow \beta = \mathbb{E}(zx)^{-1}\mathbb{E}(zy)$
Steps for 2SLS: regress x on z to get $\hat{x} = p_z x$ then regress y on $\hat{x}$. Further, $\hat{\beta}_{2SLS} = (xp_z x)^{-1} x p_z y$ To have a valid IV:

a) IV not in regression

b) IV correlated with x and unorrelated with u

c) 2SLS is more general than IV