

18-18

a)  $H_0: p = .25$   
 $H_a: p > .25$

b)

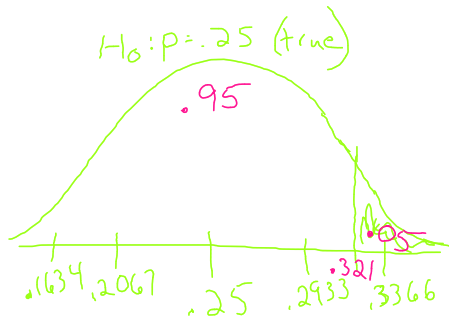
	$H_0: T$	$H_0: F$
reject $H_0$	I $\alpha = .05$	power = .3215
fail to reject $H_0$	.95	$.6785 = \beta$

Type I: reject  $H_0$  when it's true.

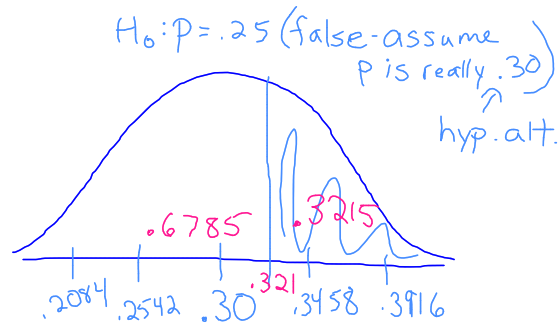
Evid. that more students choose RF tire, when each tire is actually equally likely.

Type II: fail to reject  $H_0$  when it's false. Not enough evid. to say more choose RF when they really do.

c) Calculate Power:



$$\sigma_{\hat{p}} = \sqrt{\frac{.25(1-.25)}{100}} = .0433$$



$$\sigma_{\hat{p}} = \sqrt{\frac{.30(1-.30)}{100}} = .0458$$

$\alpha = .05$

Find  $X$  so that .05 is to right:

$z = \text{infnorm}(.95) = 1.645$

$$1.645 = \frac{X - .25}{.0433}$$

$X = .321$

$$z = \frac{.321 - .30}{.0458} = .46$$

$\text{Pr}(z > .46) = \boxed{.3215}$

18-21

$H_0: p = .154$  not disc.

$H_a: p < .154$  disc.

$\hat{p} = .037$

Type I: <sup>Reject  $H_0$  /  $H_0$  True</sup> Evid. shows  
H.S.D. is disc.,  
but it isn't

Type II: Evid. doesn't  
show disc. but  
they are