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## 3.2.R1

1/1 point (graded)

We run a linear regression and the slope estimate is 0.5 with estimated standard error of 0.2. What is the largest value of b for which we would NOT reject the null hypothesis that  $\beta_1 = b$ ? (assume normal approximation to t distribution, and that we are using the 5% significance level for a two-sided test; need two significant digits of accuracy)

0.892 **✓ Answer:** 0.892 **0.892** 

5% significance level for 2-sided test => confidence interval = 95% = beta\_1 +- 1.96\*SE = 0.5 +- 1.96\*0.2 =[0.108,0.892]

### **Explanation**

The 95% confidence interval  $\hat{\beta}_1 \pm 1.96~S.~E.~(\hat{\beta}_1)$  contains all parameter values that would not be rejected at a 5% significance level.

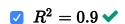
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#### 3.2.R2

1/1 point (graded)

Which of the following indicates a fairly strong relationship between X and Y?



 $\square$  The p-value for the null hypothesis  $eta_1=0$  is 0.0001



# **Explanation**

The  $\mathbb{R}^2$  is the correlation between the two variables and measures how closely they are associated. The p value and t statistic merely measure how strong is the evidence that there is a nonzero association. Even a weak effect can be extremely significant given enough data.

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