Math Virtual Learning

AP stats / Testing significance of slopes

May 21, 2020

Lesson: May , 2020

Objective/Learning Target:
Students will apply methods of significance testing to slopes of regression lines.

Review #1

Which of the following are true?

1. The area under a normal curve is always equal to 1, no matter what the mean and standard deviation are.
2. The smaller the standard deviation of a normal curve, the higher and narrower the graph.
3. Normal curves with different means are centered around different numbers

Review #2

A piece of clothing takes an average of 38 minutes to move through an assembly line. If the standard deviation is 4 minutes, and the distribution is normal, what is the probability that a piece of clothing will take over 45 minutes?

Answers

1. All three of these are properties of normal curves.
2. In the TI-84 calculator, normalcdf(45,1000,38,4) = 0.040. The 1000 is just a large number, we could have put any really big number in. Often times, I type a bunch of nines. Alternatively, we could solve this by z=(45-38)/4 = 1.75, and by the z-table and complement rule, we get 1-0.9599 = 0.040

Testing significance of slopes

Yesterday we covered methods of estimating slopes with confidence intervals. Just like with means and proportions, our next step is conducting significance tests. When we are testing slopes we usually want to know if the slope is zero or not zero. Why would we want to know if the slope is zero? Well, the regression model with a zero slope means that we are not really doing any better at predicting our response value than simply using the mean. Essentially, it means there is no association between the explanatory and response variables. This video outlines these methods for you.

[Testing Slope of a Regression Model](#)

Extra Practice

Extra Practice - complete question 6

Answers