Quiz #7

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Problem 1. (1 point)

The mean and median of any normal distribution are equal. *True or false? Why?*

Problem 2. (3 points)

Let the population distribution be normal with mean μ and standard deviation σ. Let $\bar{X}$ denote the sample mean of a sample of size $n$from this population. Then, we know the following about the distribution of $\bar{X}$:

a. $\bar{X} \sim Normal(mean = \mu, variance = \sigma^2)$

b. $\bar{X} \sim Normal(mean = \mu, variance = \frac{\sigma^2}{n})$

c. $\bar{X} \sim Normal(mean = \mu, variance = \frac{\sigma^2}{\sqrt{n}})$

d. $\bar{X} \sim Normal(mean = \frac{\mu}{n}, variance = \frac{\sigma^2}{n})$

e. None of the above are correct.

Problem 3. (1 point)

Suppose a poll suggested the US President's approval rating is 45%. We would consider 45% to be ...

a. the population mean.

b. the point estimate.

c. the statistic.

Problem #4 (5 points)

Let $Z \sim N(0, 1)$. Given that $Z > 0$, find the probability that $Z < 2$.

Problem #5 (5 points)

Let the monthly profit of a local cupcakery be normally distributed with mean \$20,000 and standard deviation of \$4,000. What is the probability that the combined profit in the months of October and November exceeds \$36,000 (assuming that profits over different months are independent)?