

STAT 3332 Statistics for Life Sciences

Fall 2006

Quiz 3

Your Name (Please **PRINT CLEARLY**):

Your *Signature*:

1. Let random variable X have a continuous probability distribution with density function $f(x)$. Then $P(a \leq X \leq b) =$ (encircle best answer)

$f(b) - f(x)$ $\int_a^b f(x) dx$ $\int_{-\infty}^{\infty} f(x) dx$ $f(a) + f(b) - 2f(a)f(b)$ $f(b)$

2. (Continuation) And $P(X = 23) =$ (encircle best answer)

$f(23)$ 0 $1/23$ -23

3. Let random variable X have the Normal distribution with mean 3 and variance 25. Let $N(0, 1)$ denote a standard normal random variable. Then $P(a \leq X \leq b) =$ (encircle best answer)

- (A) $P(a \leq N(0, 1) \leq b)$
- (B) $P(a - 3 \leq N(0, 1) \leq b - 3)$
- (C) $P(\frac{a-3}{5} \leq N(0, 1) \leq \frac{b-3}{5})$
- (D) $P(a^2 \leq N(0, 1) \leq b^2)$

4. For sampling from a population with mean μ and variance σ^2 , (encircle best answer)

- (A) the sample mean \bar{X} has mean μ
- (B) the sample mean \bar{X} has variance $\frac{\sigma^2}{n}$
- (C) the sample mean \bar{X} has distribution approximately normal in shape
- (D) each of (A), (B), (C) is true
- (E) none of (A), (B), (C) is true

5. (Continuation) For interval estimation of μ based on \bar{X} with sample size $n \geq 100$,

$$\left(\bar{X} - 2\frac{\sigma}{\sqrt{n}}, \bar{X} + 2\frac{\sigma}{\sqrt{n}} \right)$$

has confidence approximately (encircle)

50% 68% 95%
