Name: _____ Block: _____ Date: _____

LESSON 11.4 NOTES

(INVERSE NORMAL CALCULATIONS)

Remember that:

1. *Less than refers to the left tail of the normal distribution curve & greater than refers to the right tail.*
2. *The graphing calculator calculates everything based off the left tail, so if you want to calculate the right tail you have to find the left tail area by calculating "1 - right tail area".*

CALCULATOR INSTRUCTIONS: *FINDING X-VALUES (BOUNDARIES)*

1. *Press 2ND VARS , select invNorm*
2. *Type in the area, mean, and standard deviation*
3. *Select Paste, then hit enter*

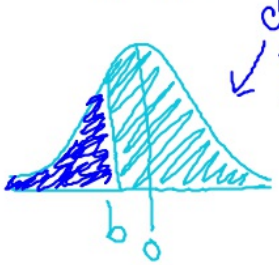
EXAMPLES

1. If $X \sim N(0, 1^2)$, find the value of a for which $P(X \le a) = 0.88$.

area = .88
μ = 0
σ = 1

a = 1.17

2. If $X \sim N(0, 1^2)$, find the value of b for which $P(X \ge b) = 0.65$.



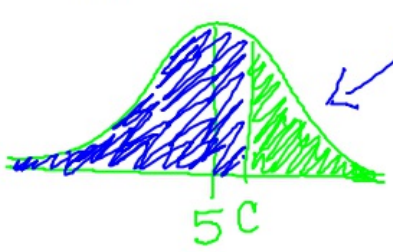
change to left tail!

P(X ≤ b) = .35

area = .35
μ = 0
σ = 1

b = -.385

3. If $X \sim N(5, 0.6^2)$, find the value of c for which $P(X \geq c) = 0.37$.



$P(X \leq C) = .63$

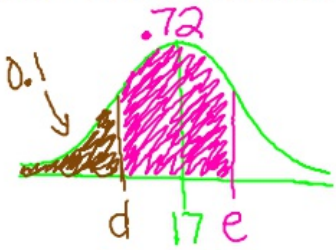
area = .63

$\mu = 5$

$\sigma = .6$

$C = 5.2$

4. If $X \sim N(17, 2.2^2)$, find the values of d and e for which $P(X \leq d) = 0.1$ and $P(d \leq X \leq e) = 0.72$.



① Find d.

area = 0.1

$\mu = 17$

$\sigma = 2.2$

$d = 14.2$

② Find e.

area = .82

$\mu = 17$

$\sigma = 2.2$

$e = 19.0$

5. In a certain year, Nando estimates that 5% of his lambs have not reached the required mass for market. The mean mass of the lambs this year is 38 kg and the standard deviation is 2.85 kg. What is the minimum mass requirement for lambs to be sent to market this year?

$P(X \leq m) = .05$

area = .05

$\mu = 38$

$\sigma = 2.85$

$m = 33.3$ kg