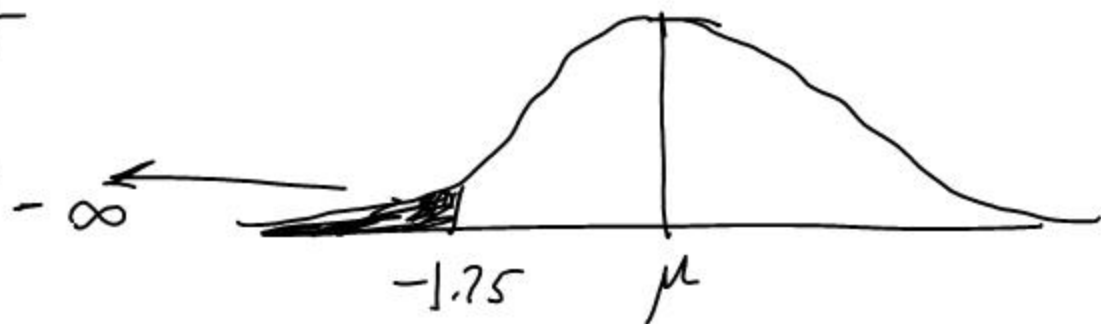


15. #

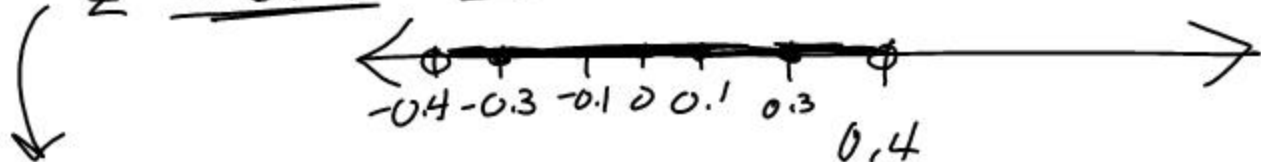
# 4h



(7a)

$$|z| < 0.4$$

$$z < 0.4 \text{ and } z > -0.4$$

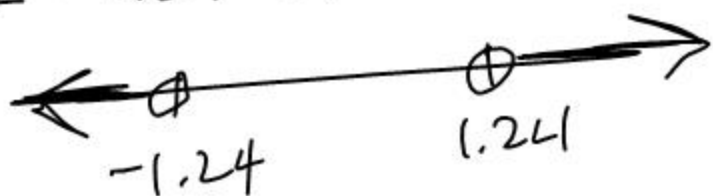


$$-0.4 < z < 0.4$$

(7b)

$$|z| > 1.24$$

$$z > 1.24 \text{ or } z < -1.24$$



$$|x+2| \leq 5$$

$$x+2 < 5 \text{ and } x+2 > -5$$

$$x < 3 \text{ and } x > -7$$



151

$$X \sim N(3.15, 0.02^2)$$

$\mu$

$\sigma^2$

$$\rightarrow \sigma = 0.02$$

$$(a) P(X < 3.2)$$

$$Z = \frac{X - \mu}{\sigma}$$

$$Z = \frac{3.2 - 3.15}{0.02} = 2.5$$

$$P(X < 3.2) = P(Z < 2.5) = 0.994$$

$$\text{normalcdf}(-9, 2.5) = 0.$$

---

$$\text{normalcdf}(-9, 3.2, 3.15, 0.02)$$

15 J  $X =$  weekly expenditures

$$X \sim N(100, 20^2)$$

$$a) P(X < 130) = P(Z < 1.5) =$$

$$Z = \frac{130 - 100}{20} = 1.5$$

#2  $X =$  diameter of a bolt

$$X \sim N(4, 0.25^2)$$

parameters of  
the distribution

$$P(3.5 < X < 4.5)$$

$$Z = \frac{3.5 - 4}{0.25}$$

$$= P(-2 < Z < 2) \approx 0.954$$

out of 500 bolts:  $(0.954)(500) = 477$

$$\frac{475 - 500}{20} = -1.25$$

#5  $X \sim N(500, 20^2)$

$$\begin{aligned} \text{a) } P(X < 475) &= P(Z < -1.25) \\ &= 0.1056 \end{aligned}$$

$$\begin{aligned} \text{(b) } &(0.1056)(0.1056)(0.1056) \\ &= 0.00118 \end{aligned}$$

15L

#3.  $X \sim$  volume of 1 bottle  
 $X \sim N(502, 1.6^2)$

$$\frac{-20}{1.6} = -\frac{5}{4}$$

$$\begin{aligned} \text{a) } P(X \geq 500) &= P(Z \geq 1.25) \\ &= 0.894 \end{aligned}$$

$$\text{a) } 1 - 0.894 = 0.106$$

$$\frac{3}{1.6}$$

$$(b) P(500 \leq X \leq 505)$$

$$= P(-1.25 \leq Z \leq 1.875) = 0.864$$

$$(c) Z = -2 = \frac{X - 502}{1.6}$$

$$X = 498.8$$

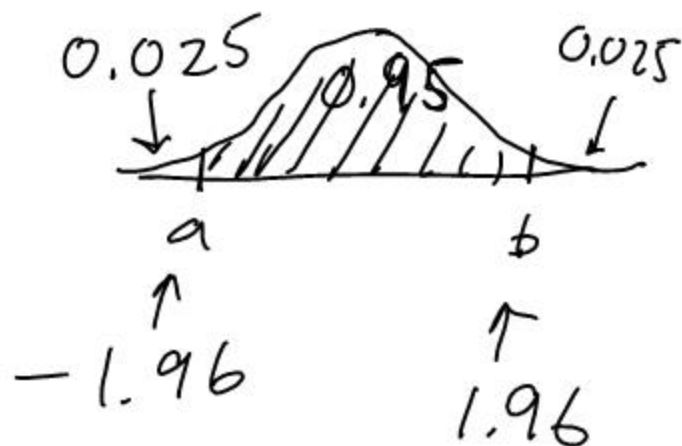
$$Z = 2 = \frac{X - 502}{1.6}$$

$$X = 505.2$$

no  
calculator

---


$\text{invnorm}(0.025)$



$X = \text{student score}$

$$X \sim N(55, 15^2)$$

$$z = \text{invnorm}(0.95) = 1.64$$

  $\uparrow$   
95<sup>th</sup> percentile

$$1.64 = \frac{d - 55}{15}$$

$$d = 79.7$$

$$z = \text{invnorm}(0.10) = -1.28$$

$$z = -1.28 = \frac{f - 55}{15}$$

$$f = 35.8$$

