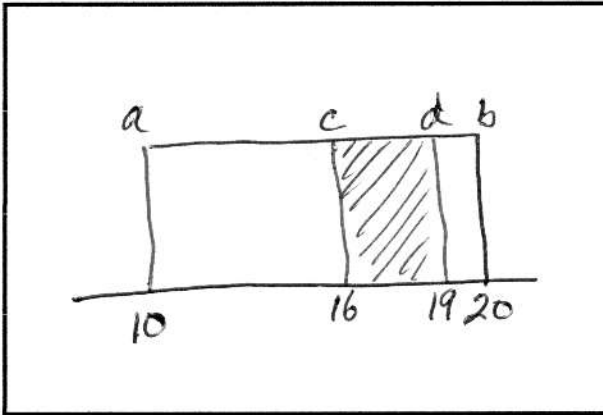


(4 points)

1. Shade in the area that corresponds to the probability statement, then determine the probability (picture is worth 2 points).



$$X \sim U[10, 20]$$

What is the probability that a random X will be between 16 and 19?

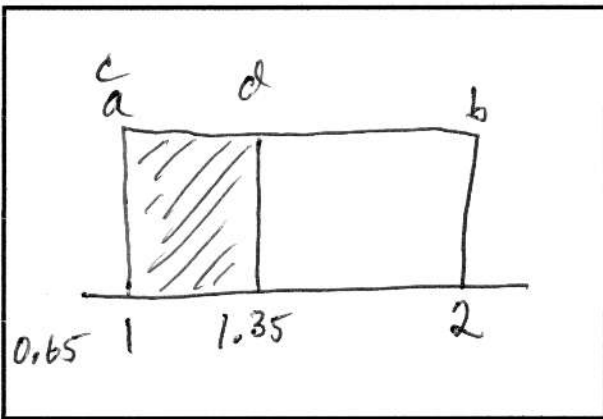
$$P(16 < X < 19) = \underline{0.3}$$

$$\text{Prob} = \frac{d-c}{b-a} = \frac{19-16}{20-10} = \left(\frac{3}{10}\right)$$

$$= 0.3$$

(5 points)

2. Shade in the area that corresponds to the probability statement, then determine the probability (picture is worth 2 points).



The random variable " X " is governed by the Uniform distribution on the interval $[1, 2]$.

What is the probability that a random X will be between 0.65 and 1.35?

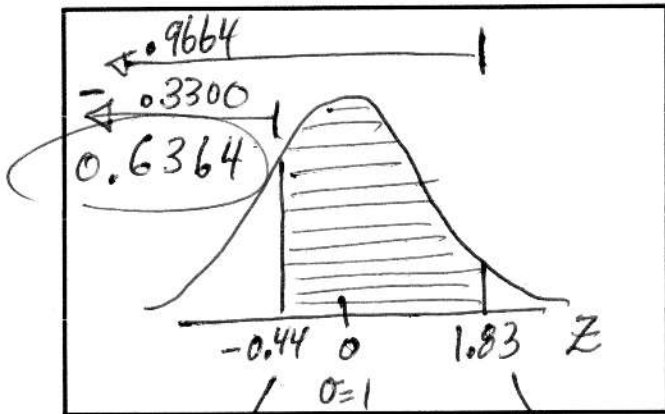
$$P(X < \overset{0.65}{\cancel{0.65}} \text{ or } \overset{1.35}{\cancel{1.35}} < X) = \underline{0.35}$$

$$\text{Prob} = \frac{d-c}{b-a} = \frac{1.35-1}{2-1}$$

$$= \frac{0.35}{1} = 0.35$$

(5 points)

3. Shade in the area that corresponds to the probability statement, then determine the probability (picture is worth 2 points).



$X \sim N(\mu=0, \sigma=1)$ ← standard Normal

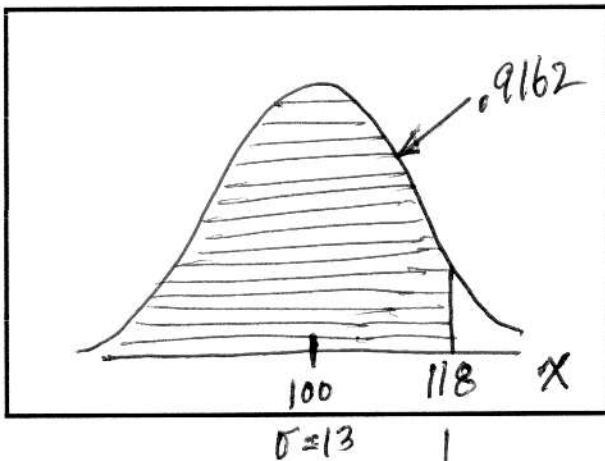
What is the probability that a random X will be between -0.44 and 1.83?

$P(-0.44 < x < 1.83) = \underline{0.6364}$



(5 points)

4. Shade in the area that corresponds to the probability statement, then determine the probability (picture is worth 2 points).

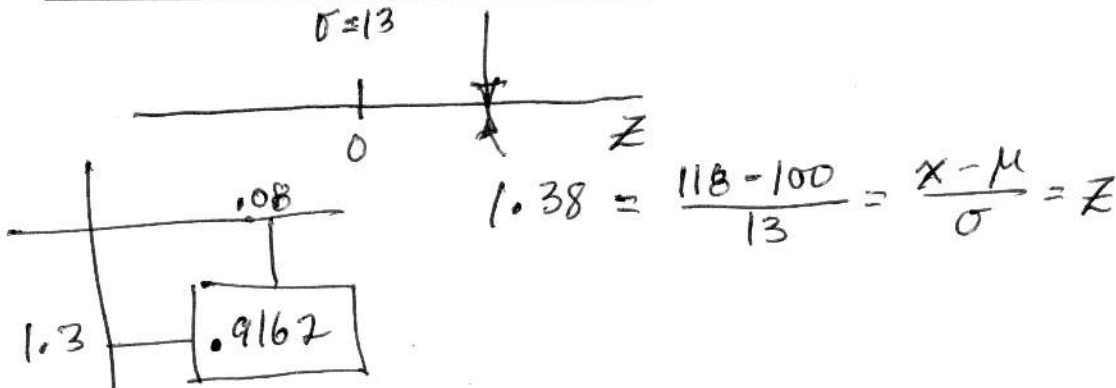


(c). $X \sim N(\mu=100, \sigma=13)$

← Not standard Normal

What is the probability that a random X will be less than 118?

$P(x < 118) = \underline{0.9162}$
(x less than 118)



(6 points)

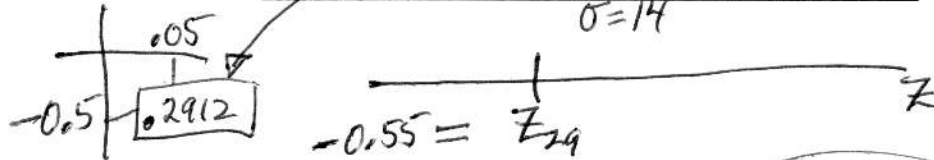
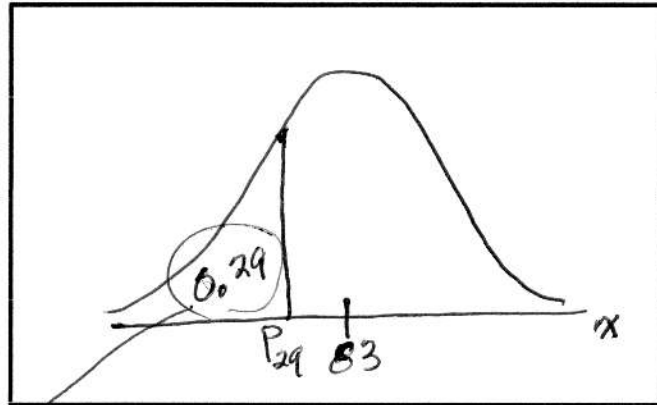
5. If the random variable X is distributed according to a normal distribution with mean (μ) equal to 83 and standard deviation (σ) equal to 14, what is the 29th percentile (P_{29}) for the population?
(Picture is worth 2 points.)

$$\frac{P_{29} - \mu}{\sigma} = Z_{29} \quad \text{rearrange}$$

$$P_{29} = (Z_{29})(\sigma) + \mu$$

$$= (-0.55)(14) + 83$$

$$= 75.3$$

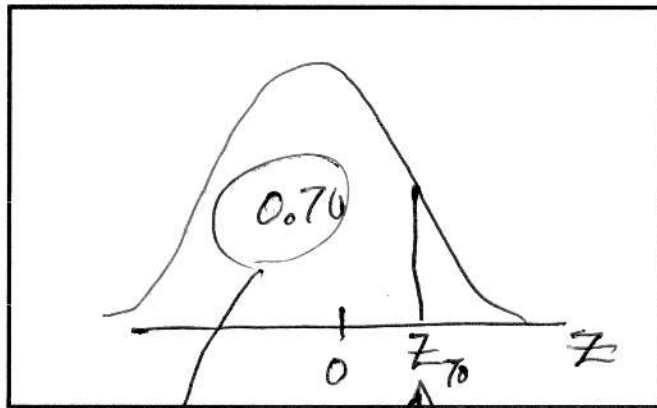


(5 points)

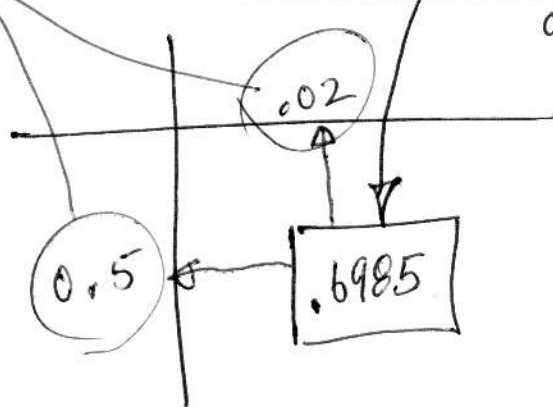
6. If the random variable X is distributed according to the standard normal distribution ($\mu = 0$ and $\sigma = 1$) what is the 70th percentile (P_{70}) for X ?
(Picture is worth 2 points.)

P_{70} for $N(\mu=0, \sigma=1)$

$$Z_{70} = 0.52$$



already standard normal



70th percentile of standard normal distribution