

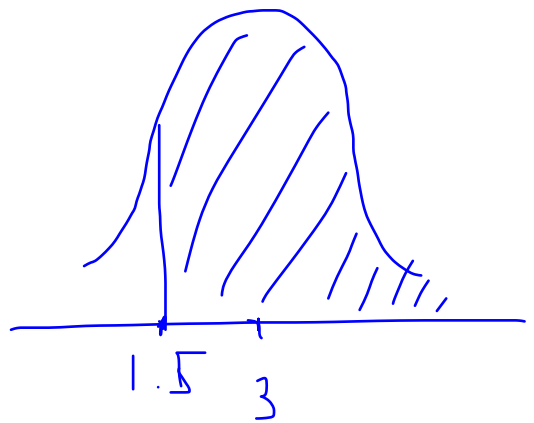
Ex. Given $X \sim N(3, 2)$

(a) $P(X \geq 1.5)$

(b) $P(2 \leq X \leq 4)$

(a) $P(X \geq 1.5)$

$= 1 - P(X \leq 1.5)$

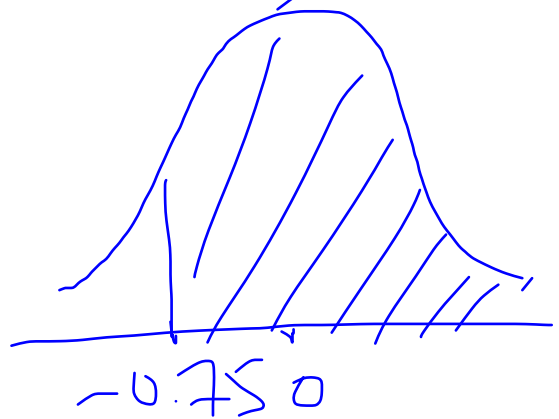


Z-score for 1.5 = $\frac{1.5 - 3}{\sqrt{2}} = -0.75$

$= 1 - P(Z \leq -0.75)$

$= 1 - 0.2266$

$= 0.7734$



Next week quiz:

- linear transformation

$$X_{\text{new}} = bX + a$$

$$\bar{X}_{\text{new}} = b\bar{X} + a$$

$$M_{\text{new}} = bM + a$$

$$Q_1_{\text{new}} = bQ_1 + a$$

$$Q_3_{\text{new}} = bQ_3 + a$$

$$SD_{\text{new}} = bSD$$

$$\text{range}_{\text{new}} = b \text{range}$$

$$IQR_{\text{new}} = b IQR$$

- Z-scores / Normal dist'n

$$X \sim N, \sigma$$

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

$$X \sim N(3, 2)$$

$$P(2 \leq X \leq 4) =$$

$$= P(X \leq 4) - P(X \leq 2)$$

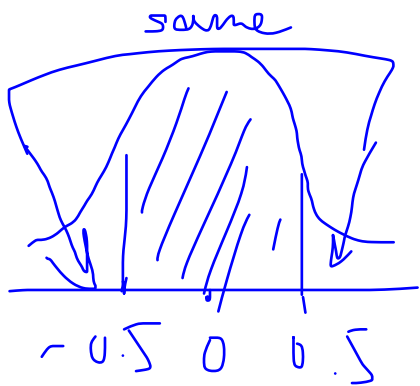


$$= 1 - 2 \cdot P(X \leq 2)$$

$$= P(Z \leq 0.5) - P(Z \leq -0.5)$$

$$\text{z-score for } 4 = \frac{4-3}{\sqrt{2}} = 0.5$$

$$\text{z-score for } 2 = \frac{2-3}{\sqrt{2}} = -0.5$$



$$= 1 - 2P(Z \leq -0.5)$$

$$= 1 - 2 \cdot 0.3085$$

$$= 0.3830$$