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Assignment 5

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① * Mean : Median : Mode
* X axis is a sympote to the curve
* point of inflextion of curve at one standard deviation lie at $(x \pm \sigma)$.
* also lie above x axis.

② (1) +/- sigma → 68.4%.
(2) +/- 2 sigma → 95%.
(3) +/- 3 sigma → 99.73%.

③ (1) $P(26 \le X \le 40) =$

$Z_1 = \frac{26-30}{5} = -0.8$ $\quad Z_2 = \frac{40-30}{5} = 2.$

So $P(26 \le Z \le 40) = 1 - P(z < -0.8) - P(z > 2)$

$1 - (0.2119) - 0.0228 = 0.76539$ Ans

(2) $X >= 45$

$P(z > \frac{45-30}{5}) = P(z >= 3)$

$= 1 - P(z < 3) = 1 - 0.9973 = 0.0027.$

(3) $|X - 30| > 5$ so X tak $X > 35$ $\quad X < 25$

$P(B\ 25 < X < 35)$

$Z_1 = \frac{25-30}{5} = -1$ $\quad Z_2 = \frac{35-30}{5} = 1$

$P(-1 < Z < 1) =$ standard value

$= \boxed{0.6342}$ Ans.

(4) $P(X \leq 25) = 0.103$ ← 2 sig fig 0.26

$P(X \leq 70) = 0.8997$ ← correspond to 1.2

$$0.26 = \frac{25 - \text{mean}}{\sigma}$$

$25 - \text{mean} = 0.26\sigma$ ... (1)

$$1.2 = \frac{70 - \text{mean}}{\sigma}$$

$70 - \text{mean} = 1.2\sigma$ ... (2)

$\boxed{\text{mean} = 47.37 \quad \sigma = 18.441}$