

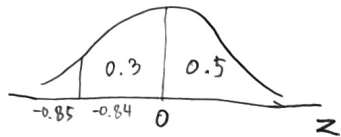
$$5.12 \quad X \sim N(71, 11^2)$$

$$(1) \quad P(X \geq 50) = P\left(z \geq \frac{50-71}{11}\right) = P(z \geq -1.909) = P(z \leq 1.909) \\ = 0.9719$$

$$\rightarrow P(0 \leq z \leq 1.91) = 0.4719 \quad 97.19\%$$

$$(2) \quad P(X \geq a) = P\left(z \geq \frac{a-71}{11}\right) = 0.8$$

$$P(0 \leq z \leq 0.84) = 0.2995, \quad P(0 \leq z \leq 0.85) = 0.3023$$



$$\frac{a-71}{11} = -0.84, \quad a = 61.76$$

61.76점

$$(3) \quad P(X \geq b) = P\left(z \geq \frac{b-71}{11}\right) = 0.1$$

$$P(0 \leq z \leq 1.28) = 0.3997, \quad P(0 \leq z \leq 1.29) = 0.4015$$

$$\frac{b-71}{11} = 1.28, \quad b = 85.08 \quad 85.08\text{점}$$

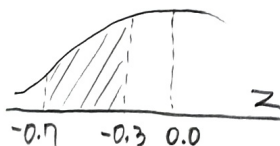
$$5.13 \quad X \sim B(100, 0.5)$$

$$X \sim N(50, 5^2)$$

$$(a) \quad P(X \geq 52) = P\left(z \geq \frac{51.5-50}{5}\right) = P(z \geq 0.3) \\ = 0.5 - P(0 \leq z \leq 0.3) \\ = 0.5 - 0.1179 = 0.3821$$

$$(b) \quad P(X < 47) = P\left(z \leq \frac{46.5-50}{5}\right) = P(z \leq -0.7) = P(z \geq 0.7) \\ = 0.5 - P(0 \leq z \leq 0.7) \\ = 0.5 - 0.2580 = 0.242 \quad 0.242$$

$$(c) \quad P(46 < X \leq 48) = P\left(\frac{46.5-50}{5} < z \leq \frac{48.5-50}{5}\right)$$



$$= P(-0.7 < z \leq -0.3) = P(0 \leq z \leq 0.7) - P(0 \leq z \leq 0.3) \\ = 0.2580 - 0.1179 = 0.1401$$

$$(d) \quad P(51 \leq X < 56) = P\left(\frac{50.5-50}{5} \leq z < \frac{55.5-50}{5}\right)$$

$$= P(0.1 \leq z < 1.1) = P(0 \leq z < 1.1) - P(0 \leq z \leq 0.1) \\ = 0.3643 - 0.0398 = 0.3245 \quad 0.3245$$

$$6.8 \quad \mu = 6 \text{ (g)}, \quad \sigma = 2.5 \text{ (g)} \quad \frac{\sigma^2}{n} = \frac{6.25}{50} = 0.125$$

$$\bar{X} \sim N(6, 0.125)$$

$$P(5.75 < \bar{X} < 6.25) = P\left(\frac{5.75-6}{\sqrt{0.125}} \leq Z \leq \frac{6.25-6}{\sqrt{0.125}}\right)$$

$$= P(-0.71 \leq Z \leq 0.71) = 2 \times P(0 \leq Z \leq 0.71)$$

$$= 0.2611 \times 2 = 0.5222$$

$$0.5222$$