

For a certain type of mobiles, the length of time between charges of the battery is normally distributed with a mean of 50 hours and a standard deviation of 15 hours. A person owns one of these mobiles and wants to know the probability that the length of time will be between 50 and 70 hours is (Given $\phi(1.33) = 0.9082$, $\phi(0) = 0.5$)

(a) - 0.4082

(b) 0.5

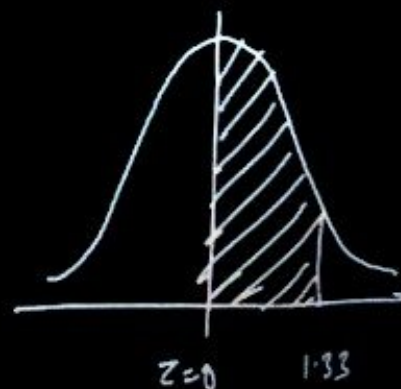
(c) 0.4082

(d) - 0.5

$$\mu = 50, \sigma = 15, Z = \frac{X - 50}{15}$$

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$$\begin{aligned} P(50 < X < 70) &= P\left(\frac{50 - 50}{15} < Z < \frac{70 - 50}{15}\right) \\ &= P(0 < Z < 1.33) \end{aligned}$$



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

$$X = 50$$

$$Z_1 = \frac{50 - 50}{15} = 0$$

$$\text{for } X = 70$$

$$Z_2 = \frac{70 - 50}{15} = \frac{20}{15} = 1.33$$

$$P(50 < X < 70) = P(0 < Z < 1.33)$$

Given

$$\Phi(1.33) = 0.9082$$

and

$$\Phi(0) = 0.5$$

$$P(0 < Z < 1.33) = 0.9082 - 0.5 \\ = 0.4082$$