

a.

$$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} = 20$$

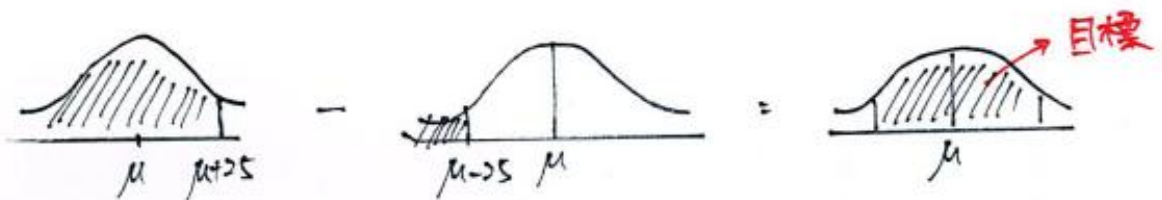
$$\frac{500}{\sqrt{n}} = 20$$

$$500 = 20\sqrt{n}$$

$$\sqrt{n} = 25$$

$$n = 25^2 = 625$$

b.



$$Z = \frac{\bar{x} - \mu}{\sigma / \sqrt{n}}$$

$$\frac{25}{\frac{500}{\sqrt{625}}} = 1.25$$

$$P = 0.8944$$

$$\frac{-25}{20} = -1.25$$

$$P = 0.1056$$

$$0.8944 - 0.1056 = 0.7888$$

$$= 78.88\%$$