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1. $M=70$, $\sigma=8$, $n=25$, $\bar{x}=73$, $\alpha=0.05$

(a) $H_0: M \geq 73$

$$Z = \frac{\bar{x} - \mu}{\sigma/\sqrt{n}} = \frac{73 - 70}{8/\sqrt{5}} = \frac{3}{\frac{8}{\sqrt{5}}} = \frac{15}{8} \approx 1.875, P(\bar{x} \geq 73 | M=70) = 0.03096 < 0.05$$

拒絕 H_0

(b) $M=70$, $n=25$, $S=9$, $\bar{x}=73$, $\alpha=0.05$

$$Z = \frac{73 - 70}{9/\sqrt{5}} = \frac{3}{\frac{9}{\sqrt{5}}} = \frac{15}{9} = 1.666$$

拒絕 H_0

2.

$$(a) E(\hat{p}) = E\left(\frac{\sum X_i}{n}\right) = \frac{1}{n} E(\sum X_i) = \frac{1}{n} n \cdot p = p$$

(b) 1

$$(c) p=0.6, q=0.4, [0.504, 0.696]$$

$$(d) [0.519, 0.681]$$

3.

(a) 拒絕 H_0