

$$H_1: \mu \neq 0$$

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$$\Rightarrow 2. P_{H_0}(\bar{X} > c) = 0.05 \Rightarrow P_{H_1}(\bar{X} > c) = 0.025$$

$$\Rightarrow 0.975 = P_H \left(\frac{\bar{X} - 0}{\sqrt{1/500}} < \frac{C - 0}{\sqrt{1/500}} \right) = \Phi \left(\frac{C}{\sqrt{1/500}} \right)$$

$$|\bar{x}| > 0.087 \quad \text{re } H_0 \text{ with } \alpha = 0.087$$

$$= P_{H_0} \left(\frac{\bar{X} - 0.1}{\sqrt{1/500}} > \frac{0.077 - 0.1}{\sqrt{1/500}} \right) + P_{H_0} \left(\frac{\bar{X} - 0.1}{\sqrt{1/500}} < \frac{-0.077 - 0.1}{\sqrt{1/500}} \right) =$$

$$= 1 - \phi(-0.29) + \phi(-4.18) = 0.614$$