

$$H_0 : \mu = 35$$

$$H_a : \mu \neq 35$$

$$\bar{x} = 40 \quad \sigma = 8$$

$$n = 16$$

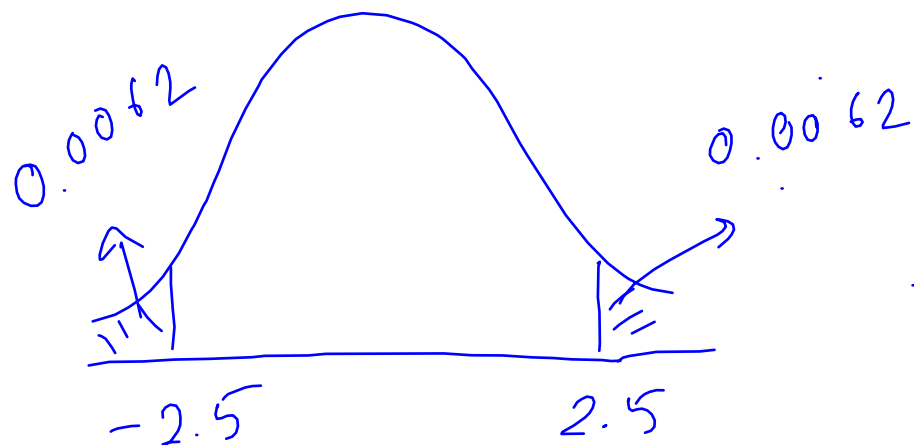
$$z_{\text{test}} = \frac{40 - 35}{8/\sqrt{16}} = 2.5$$

$$\alpha = 0.1 \Rightarrow \text{Rej. } H_0$$

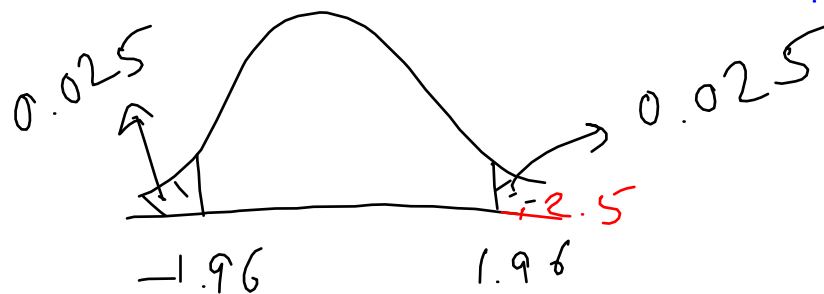
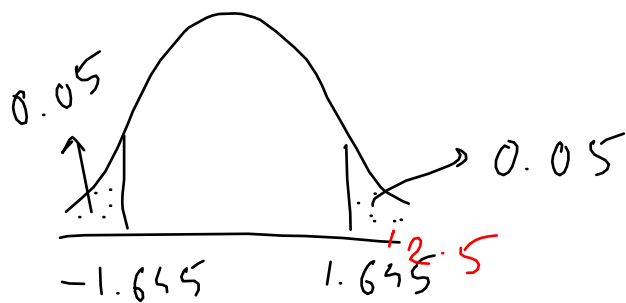
$$\alpha = 0.05 \Rightarrow \text{Rej. } H_0$$

$$\alpha = 0.01 \Rightarrow \text{Fail to rej. } H_0$$

Sec. 11.2 (cont.)



$$p\text{-value} = 2 \times 0.0062 = 0.0124$$



$$H_0 : \mu = 35$$

$$H_a : \mu > 35$$

$$\bar{x} = 40 \quad \sigma = 8$$

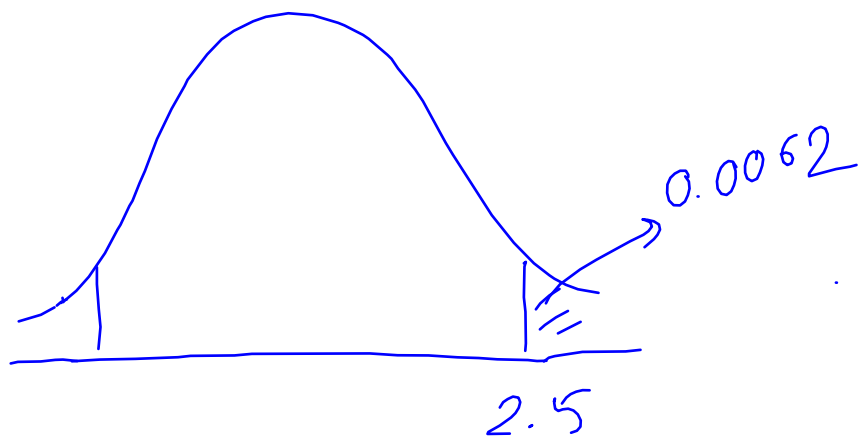
$$n = 16$$

$$z_{\text{test}} = \frac{40 - 35}{8/\sqrt{16}} = 2.5$$

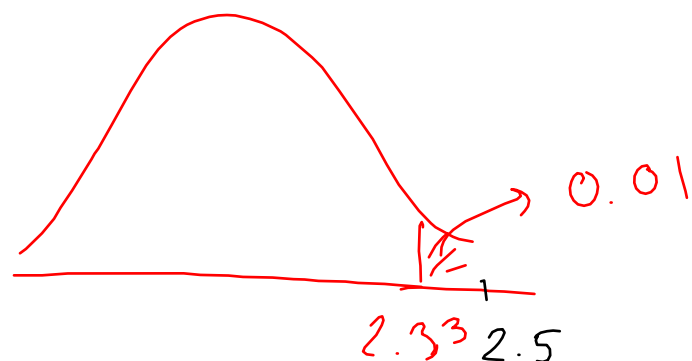
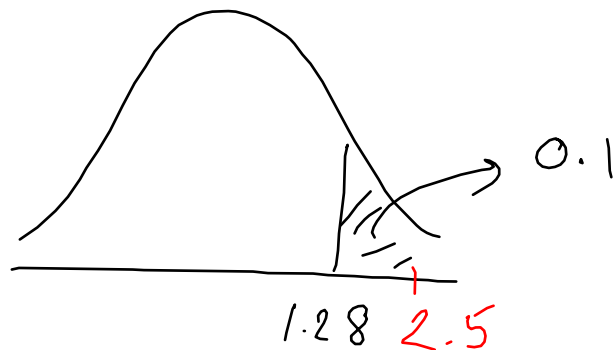
$$\alpha = 0.1 \Rightarrow \text{Rej. } H_0$$

$$\alpha = 0.05 \Rightarrow \text{Rej. } H_0$$

$$\alpha = 0.01 \Rightarrow \text{Rej. } H_0$$



$$p\text{-value} = 0.0062$$



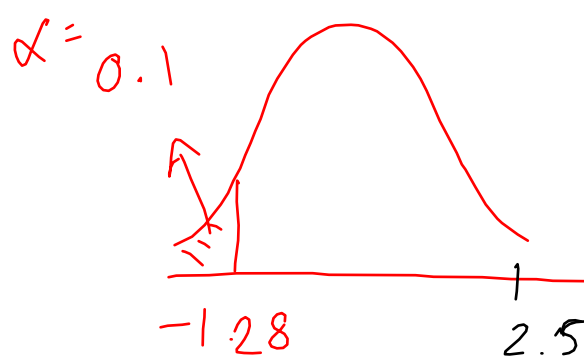
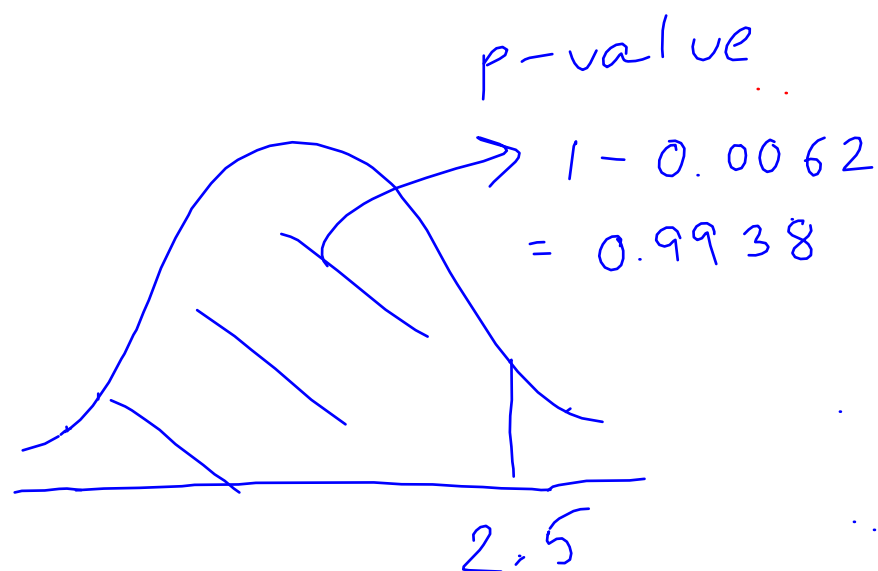
$$H_0 : \mu = 35$$

$$H_a : \mu < 35$$

$$\bar{x} = 40 \quad \sigma = 8$$

$$n = 16$$

$$z_{\text{test}} = \frac{40 - 35}{8/\sqrt{16}} = 2.5$$



$\alpha = 0.1 \Rightarrow$ Fail to reject H_0

$\alpha = 0.05 \Rightarrow$

$\alpha = 0.01 \Rightarrow$

Sec 11.3 (σ unknown)

No $\sigma \Rightarrow$ use sample std.
dev.

$$\frac{\bar{x} - \mu_0}{s / \sqrt{n}} = t_{\text{test}} \quad H_0: \mu = \mu_0 \text{ (s)}$$

$$H_0 : \mu = 35$$

$$t_{test} = \frac{\bar{x} - 35}{s/\sqrt{n}}$$

$$H_a : \mu \neq 35$$

$$= 2.5$$

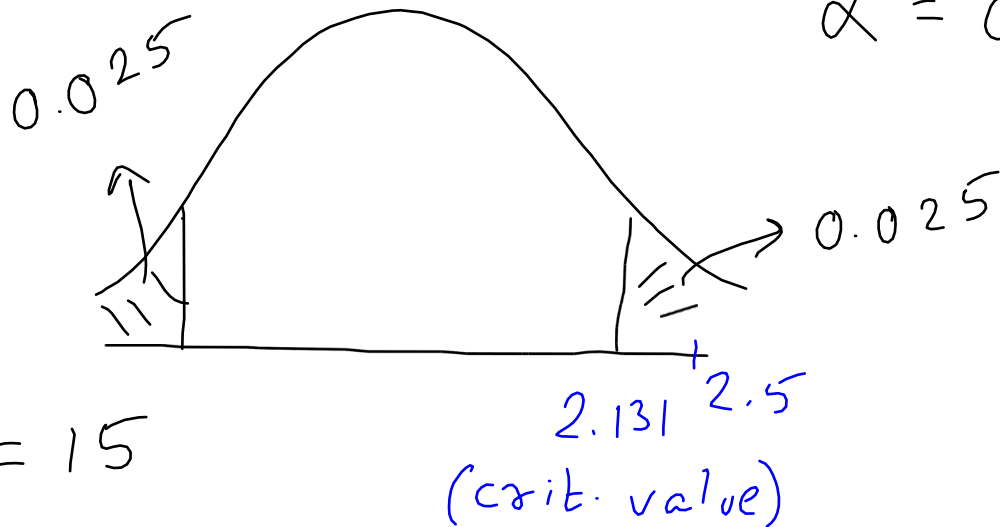
$$\bar{x} = 40$$

$$s = 8$$

$$n = 16$$

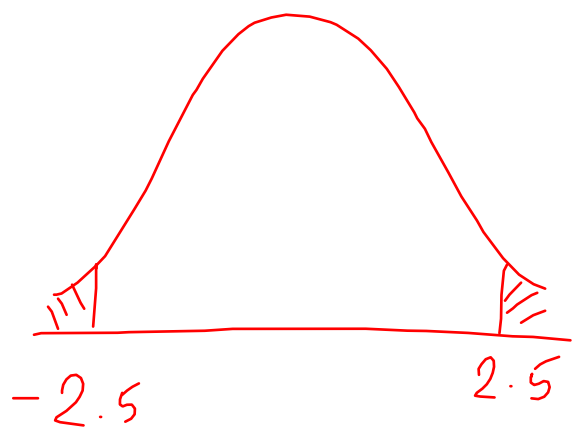
$$df = n - 1 = 15$$

$$\alpha = 0.05$$



$$\text{Rej. } H_0 \because t_{test} > 2.131$$

$$= \text{T.INV.2T}(0.05, 15)$$



$$\boxed{\text{shaded area}} = 0.0245$$

(adding both sides)

↓
p-value

$$= \text{T.DIST.2T}(2.5, 15)$$

$$\text{Rej. } H_0 \because p\text{-value} < \alpha$$

$$H_0: \mu = 35$$

$$t_{test} = \frac{\bar{x} - 35}{s/\sqrt{n}}$$

$$H_a: \mu > 35$$

$$= 2.5$$

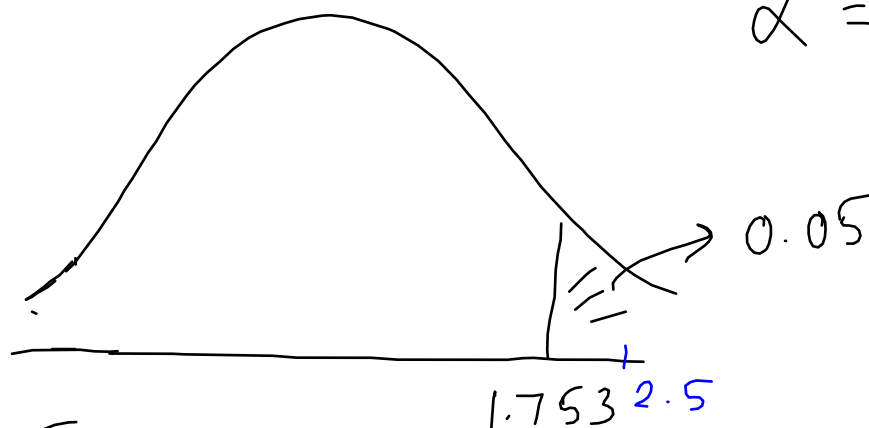
$$\bar{x} = 40$$

$$\alpha = 0.05$$

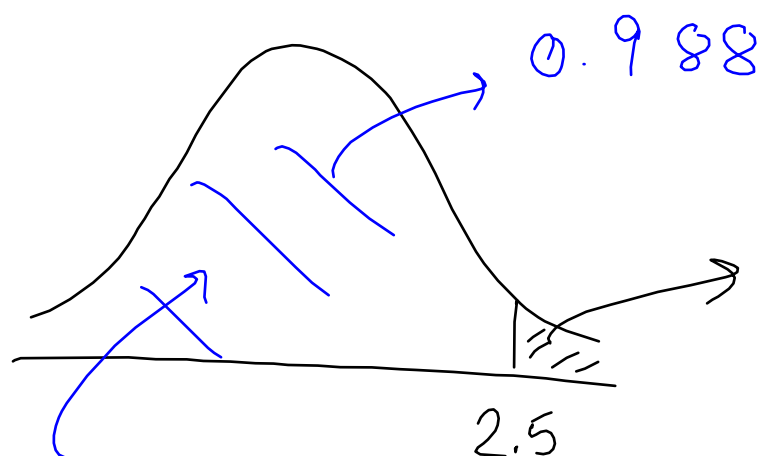
$$s = 8$$

$$n = 16$$

$$df = n - 1 = 15$$



$$\text{Rej. } H_0 \because t_{test} > 1.753$$



$$p\text{-value} = 1 - 0.988 = 0.012$$

$$= \text{T.DIST}(2.5, 15, \text{TRUE})$$

$$\rightarrow 0.988$$

$$= \text{T.DIST.RT}(2.5, 15)$$

$$\rightarrow 0.012$$

$$\text{Rej. } H_0 \because p\text{-value} < \alpha$$