

(15) $y = x e^{-x}$

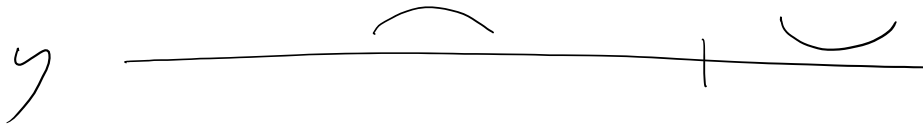
$$y' = -x e^{-x} + e^{-x}$$

$$= e^{-x} (1 - x)$$

$$y'' = -e^{-x} + (1 - x) \cdot -e^{-x}$$

$$= e^{-x} (-1 - (1 - x)) = e^{-x} (-2 + x) = 0$$

POI $\rightarrow x = 2$



$$(16) \quad y = \frac{\ln x}{x^2} \quad (x > 0)$$

$$\frac{dy}{dx} = \frac{x^2 \cdot \frac{1}{x} - 2x \ln x}{x^4} = \frac{1 - 2 \ln x}{x^3}$$

$$y'' = \frac{x^3 \left(-\frac{2}{x}\right) - (1 - 2 \ln x) \cdot 3x^2}{x^6}$$

$$= \frac{-2x^2 - 3x^2 + 6x^2 \ln x}{x^6} = \frac{-5x^2 + 6x^2 \ln x}{x^6}$$

$$= \frac{-5 + 6 \ln x}{x^4} = 0$$

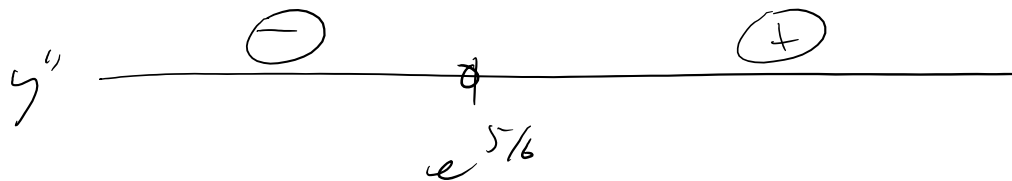
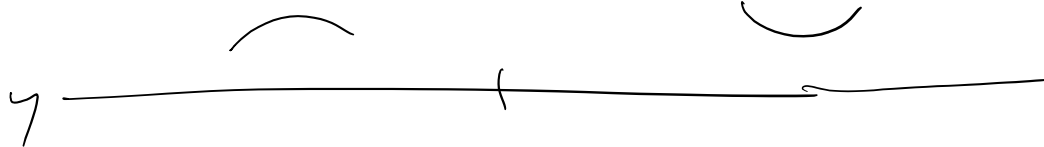
$$-5 + 6 \ln x = 0$$

$$6 \ln x = 5$$

$$\ln x = \frac{5}{6}$$

$$x = e^{5/6}$$

POI



(2)

