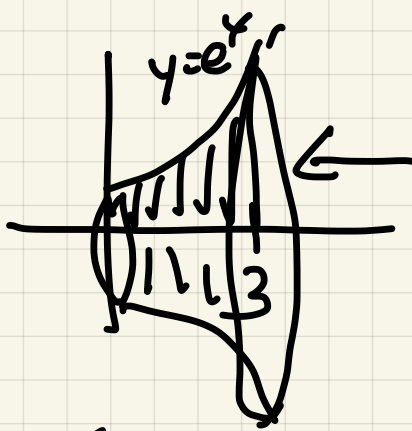


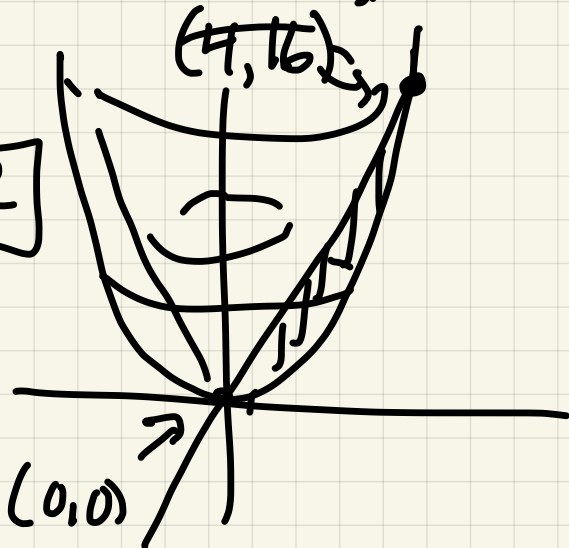
Quiz 3

#1



$$\text{Volume} = \int_0^3 \pi (e^x)^2 dx = \pi \int_0^3 e^{2x} dx = \frac{\pi}{2} e^{2x} \Big|_0^3 = \frac{\pi(e^6 - 1)}{2}$$

#2



$$4x = y = x^2 \Rightarrow x^2 - 4x = 0 \Rightarrow x(x-4) = 0 \Rightarrow x = 0, 4$$

Revolve about y -axis,
so need x in terms of y :

$$4x = y \Rightarrow x = \frac{y}{4} \leftarrow \text{inner radius}$$

$$x^2 = y \Rightarrow x = \sqrt{y} \leftarrow \text{outer radius}$$

$$\text{so } V = \int_{y=0}^{y=16} \pi \left((\sqrt{y})^2 - \left(\frac{y}{4} \right)^2 \right) dy = \pi \int_0^{16} y - \frac{y^2}{16} dy =$$

$$\pi \left(\frac{y^2}{2} - \frac{y^3}{3 \cdot 16} \right) \Big|_0^{16} = \pi \left(\frac{256}{2} - \frac{256}{3} \right) =$$

$$\frac{.256\pi}{6} = \frac{128\pi}{3}$$