

I. Find the indicated derivatives. Do not simplify your answers. (5 points each – 15 total)

(a) $y = \sec^3(4x)$

$$\frac{dy}{dx} =$$

(b) $w = (t^3 + 1)^4 \sqrt[3]{1-t}$

$$\frac{dw}{dt} =$$

(c) $f(x) = \frac{x^{-3} \sin 3x}{x - \cos 4x}$
 $f'(x) =$

II. Find all points (i.e. give the coordinates of the points!) on the graph of $y = x^2 e^{-x}$ at which the tangent line to the graph is horizontal. Neatly show all of your work and clearly indicate your answer. You must justify your answer analytically. Below you are given the graph of $y = x^2 e^{-x}$ for reference. (5 points)

