

Name _____

- You have 15 minutes
- No calculators
- Show sufficient work

1. (2 points) What is the slope of the curve $y = 5 - 2e^x$ at its x -intercept? Simplify your answer.

2. (2 points) Find the equation of the line which is tangent to the curve $f(x) = \sqrt{x}$ and parallel to the line $x - 10y = 40$.

3. (2 points each) Using Leibniz notation (i.e., $\frac{dy}{dx}$, $\frac{dP}{dt}$, etc.), find derivatives for each of the following functions.

(a) $\alpha = 5e^t + 2 \csc(t) - 6 \tan(t) + \sin(2 \arctan(8/15))$

(b) $w = \left(\frac{x\sqrt{x}}{\sqrt[3]{x^4}} \right)^{24}$ (simplify your answer)

(c) $H = \frac{2 + 5 \cos(r)}{r^8 + 42}$