

Name _____

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

1. (2 points) Determine the value of $g'(\pi/4)$ given that $g(x) = 10 \sin x + 4 \cos x + 100$.

2. (2 points) Determine the equation of the line which is tangent to the curve

$$y = 2e^x - 6$$

at its x -intercept.

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) $y = \left(\frac{x\sqrt{x}}{\sqrt[6]{x}} \right)^3$ (simplify your answer)

(b) $\theta = \frac{8 \tan t}{t^5 + 6}$

(c) $w = 10q^8 e^q + e^{\cos(\pi/13)}$