

Name \_\_\_\_\_

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

1. (2 points) Determine the value of  $g'(1)$  given that  $g(x) = 4x^3e^x$ .

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

$$y = 4 \tan x + 5 \cos x + 2e^x + 8$$

at its  $y$ -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)  $y = x^2 + \sqrt{\ln(2e^{\cos(\pi/5)})}$  (simplify your answer)

(b)  $w = \left(\frac{\sqrt{p^3}}{p\sqrt[3]{p}}\right)^{30}$  (simplify your answer)

(c)  $q = \frac{4 \sin t}{t^2 + 3}$