Math 220 (section AD?) **Quiz 4** **Fall 2019**

Name _____

- You have 20 minutes
- No calculators
- Show sufficient work

1. (2 points) Write an equation for the line which is tangent to $f(x) = x^4 + x^3 - 2x^2$ at its negative x-intercept.

2. (2 points) What is the slope of the following curve at its y-intercept? Simplify your answer.

   $g(x) = 5\sin(x) - 2e^x + 16\cos(x) + 10x^2 + 4x - 9$

3. (2 points each) Using Leibniz notation (i.e., $\frac{dy}{dx}$, $\frac{dP}{dt}$, etc.), find derivatives for each of the following functions. Your answer to part (a) must be simplified.

(a) $w = \left(\dfrac{\sqrt[3]{p}}{p\sqrt{p}} \right)^{-12}$

(b) $R = v^5 \csc(v) + \ln\left(5\pi^3 + 2e^4\right)$

(c) $\theta = \dfrac{5e^t + \sqrt{t}}{9t + \tan(t)}$