

Name \_\_\_\_\_

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

1. (2 points) Compute  $w'(t)$  for the given function.

$$w(t) = \sqrt[3]{\sin(t^5 + 4t)}$$

2. (3 points) Compute the second derivative  $g''(x)$  for the given function.

$$g(x) = \arctan(3e^{2x})$$

3. (3 points) Find the equation of the line tangent to the given curve at the point  $(-1, 2)$ .

$$2xy^3 = 5x^3y - 6$$

4. (2 points) Compute  $\frac{dy}{dx}$  for the given function. Write your answer completely in terms of  $x$ .

$$y = (e^{9x} + 5)^{x^2}$$