

Name _____

No calculators allowed!

1. (2 points) Ralph Howard purchased some guppies for his new fish tank. They reproduced many times and Ralph noted that the total number of guppies could be approximated by the function $g(t) = t^2 + 30$, where t represents the number of months since his original purchase. Precisely five months after his original purchase, the total number of guppies in his fish tank are increasing by
 - (a) 55 guppies per month
 - (b) 40 guppies per month
 - (c) 30 guppies per month
 - (d) 25 guppies per month
 - (e) 10 guppies per month
 - (f) 5 guppies per month

2. (2 points) On the graph of $y = 4x^2 - 300$, what is the slope of the curve at $x = 10$?
 - (a) 80
 - (b) 70
 - (c) 60
 - (d) 40
 - (e) 20
 - (f) 10

3. (2 points) If $y = 5t^2 + \ln(t) + 6$, then

$$\frac{dy}{dt} =$$

4. (2 points) If $y = e^{3x}$, then

$$\frac{dy}{dx} =$$

5. (2 points) If $P(t) = t^2e^t$, then

$$P'(t) =$$