

# Math 157 - Quiz 10

November 13, 2013

Name key

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary.

1. (4 points) Determine the derivative of each function.

(a)  $f(x) = e^{x^2}$

$$f'(x) = 2x e^{x^2}$$

(b)  $g(t) = t^2 e^{5t}$

$$g'(t) = 2t e^{5t} + 5t^2 e^{5t}$$

2. (3 points) Find an equation of the line tangent to the graph of  $y = e^{\sqrt{x}}$  at the point where  $x = 4$ .

$$\frac{dy}{dx} = \frac{1}{2} x^{-1/2} e^{\sqrt{x}}$$

$$m = \left. \frac{dy}{dx} \right|_{x=4} = \frac{e^2}{4} \approx 1.847$$

$$x=4 \Rightarrow y = e^2 \approx 7.389$$

$$y - e^2 = \frac{e^2}{4} (x - 4)$$

or

$$y - 7.389 = 1.847(x - 4)$$

3. (1 point) What is the exact value of  $\ln(e^{\sqrt{7}})$ ?

$$\ln(e^{\sqrt{7}}) = \boxed{\sqrt{7}}$$

4. (2 points) Make a table of some values of the function  $f(x) = 2^{-x}$ . Then plot points to sketch the graph.

x	$y = 2^{-x}$
-3	8
-2	4
-1	2
0	1
1	0.5
2	0.25
3	0.125

