

1. (1 point) Let

$$f(x) = (-6x^2 + 8)^3(-4x^2 + 4)^{10}$$

$$f'(x) = \underline{\hspace{2cm}}$$

Correct Answers:

- $(-6x^2+8)^2 * (-4x^2+4)^9 * (624x^3 + -784x)$

2. (1 point) Find the derivative of the function

$$g(x) = (x^2 + 4x + 3)e^x$$

$$g'(x) = \underline{\hspace{2cm}}$$

Correct Answers:

- $[1x^2+(2*1+4)*x+4+3]*e^x$

3. (1 point) Find the derivative of the function

$$g(x) = \frac{e^x}{2x+5}$$

$$g'(x) = \underline{\hspace{2cm}}$$

Correct Answers:

- $[\exp(x)] / (2*x+5) - 2*\exp(x) / [(2*x+5)^2]$

4. (1 point)

Differentiate the following function:

$$f(x) = e^x + x^e$$

$$f'(x) = \underline{\hspace{2cm}}$$

Correct Answers:

- $e^x + e^{x-1}$

7. (1 point) Let  $f(x) = \frac{3x^3 - 7x^2}{\sqrt[3]{x^4}}$ . Evaluate  $f'(x)$  at  $x = 2$ .

$$f'(2) = \underline{\hspace{2cm}}$$

Correct Answers:

- 4.23307

8. (1 point) The population of a slowly growing bacterial colony after  $t$  hours is given by  $p(t) = 4t^2 + 21t + 150$ . Find the growth rate after 2 hours.

Answer:  $\underline{\hspace{2cm}}$

Correct Answers:

- $4*2*2+21$

9. (1 point) Let  $f(x) = \frac{6x^2+3x+2}{\sqrt{x}}$ . Determine  $f'(x)$ .

Answer:  $\underline{\hspace{2cm}}$

Find  $f'(3)$ .

Answer:  $\underline{\hspace{2cm}}$

Correct Answers:

- $(3/2)*6*x^{.5} + (3/2)*x^{-.5} - (2/2)*x^{-.5}$
- 16.2620325821745

10. (1 point) If  $f(x) = 4\sqrt{x}(x^3 - 3\sqrt{x} + 7)$ , find  $f'(4)$ .

$$f'(4) = \underline{\hspace{2cm}}$$

Correct Answers:

- $3.5*4*4^{2.5}-4*3+0.5*4*7*4^{-0.5}$