1.(1 pt) If $f(x) = 5x^2 - 4e^x$, find $f'(x)$.

Find $f'(5)$.

Find $f''(x)$.

Find $f''(5)$.

2.(1 pt)
Let $f(x) = x^7 + 2e^x$.
(a) $f'(1) =$ _____
(b) $f''(1) =$ _____

3.(1 pt) Let $f(x) = x^4 + 4x^3 + 5x^2 + 3x$.
Then $f'(x)$ is _____
and $f'(4)$ is _____
$f''(x)$ is _____
and $f''(4)$ is _____

4.(1 pt) Let $f(x) = x^7 - 2x^5 + 7x^3 - 2x - 1$.
Then $f'(x)$ is _____
$f'(4)$ is _____
$f''(x)$ is _____
and $f''(4)$ is _____

5.(1 pt) If $f(x) = 7x^8 - 3x^5 - 5x^3 + 5x$, find $f'(x)$.

Find $f'(3)$.

Find $f''(x)$.

Find $f''(3)$.

6.(1 pt) If $f(x) = 6 + \frac{4}{x} + \frac{7}{x^2}$, find $f'(x)$.

Find $f'(5)$.

Find $f''(x)$.

Find $f''(5)$.

7.(1 pt) Let $h(t) = 3t^{3.2} - 3t^{-3.2}$.
Then $h'(t)$ is _____
$h'(4)$ is _____ ,
$h''(t)$ is _____
and $h''(4)$ is _____

8.(1 pt) Let $f(x) = \frac{1-5x}{1+5x}$. Then $f'(1)$ is _____
and $f''(1)$ is _____
and $f'''(1)$ is _____

9.(1 pt)
Let $f(x) = \frac{x^2+9x+18}{3x+9}$.
(a) $f'(4) =$ _____
(b) $f''(4) =$ _____
[NOTE: There are two ways to do this problem. The first is the quotient rule. The second is much easier and does not use the quotient rule.]

10.(1 pt) If $g(t) = -3t^4 + 3t^2 + 9$ find
$g(0) =$ _____
$g'(0) =$ _____
$g''(0) =$ _____
$g'''(0) =$ _____
$g^{(4)}(0) =$ _____
$g^{(5)}(0) =$ _____

11.(1 pt) Let $f(x) = x\sin(x)$. Find $f''(0.5)$.
(Remember – radian mode!)

12.(1 pt) Let $h(t) = \tan(5x+6)$. Then $h'(4)$ is _____
and $h''(4)$ is _____

13.(1 pt) Let $g(s) = (2s-7)^7$.
Then $g'(s)$ is _____
$g'(5)$ is _____ ,
$g''(s)$ is _____
and $g''(5)$ is _____

14.(1 pt) If $g(t) = (6-t^2)^2$ find
$g(0) =$ _____
$g'(0) =$ _____
$g''(0) =$ _____

15.(1 pt) Let $f(x) = \sqrt{x^2+10}$.
Then $f'(x)$ is _____
$f'(1)$ is _____ ,
$f''(x)$ is _____
and $f''(1)$ is _____

16.(1 pt) Let
$$f(x) = 8e^{-x/3}$$
$f^{(6)}(1) =$ _____

17.(1 pt) $\frac{d^4}{dx^4}(\frac{-4x^4}{1-x}) =$ _____
Note: There is a way of doing this problem without using the quotient rule 4 times.

18.(1 pt) Let
$$f(x) = \frac{6x^4}{1-x}$$
$f^{(4)}(x) =$ _____
Note: There is a way of doing this problem without using the quotient rule 4 times.

19.(1 pt) Let
$$f(x) = \frac{11x}{1-x}$$
$f^{(4)}(x) =$ _____

20.(1 pt) Let

$$f(x) = -5\ln[\sin(x)]$$

$f''(x) =$ _____

21.(1 pt) Let

$$f(x) = 8\ln[\sec(x) + \tan(x)]$$

$f''(x) =$ _____

HINT: Simplify the first derivative before you find the second derivative.

22.(1 pt) Find the 75 th derivative of the function $f(x) = \cos(x)$.

The answer is function _____