Megan Rebecca Vaughn Homework Set 2 due 1/27/04 at 10:59 PM

You may need to give 4 or 5 significant digits for some (floating point) numerical answers in order to have them accepted by the computer.

 $f(x) = \frac{\sqrt{x} - 3}{\sqrt{x} + 3}$

find f'(x).

Find f'(4).

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

Find f'(3).

x=___

3.(1 pt) Find the *x* coordinate of the point on the curve $y = x + 3x^{-1}, x > 0$ where the tangent line has slope -3.

4.(1 pt) If
$$f(t) = \frac{13}{t^5}$$
, find $f'(t)$

[NOTE: Your answer should be a function in terms of the variable 't' and not a number!]

5.(1 pt) If $f(x) = \frac{5x+7}{4x+4}$, find f'(x).

Find f'(3).

6.(1 pt) Let $f(x) = \frac{1-2x}{1+2x}$. Then f'(4) is _____ and f''(4) is _____

7.(1 pt) The angle of elevation to the top of a building is found to be 9° from the ground at a distance of 4500 feet from the base of the building. Find the height of the building.

8.(1 pt) A survey team is trying to estimate the height of a mountain above a level plain. From one point on the plain, they observe that the angle of elevation to the top of the mountain is 28° . From a point 2000 feet closer to the mountain along the plain, they find that the angle of elevation is 30° .

How high (in feet) is the mountain?

9. (1 pt) Evaluate the limit
$\sin 6x$
$\lim_{x \to 0} \frac{\sin 4x}{\sin 4x}$
10. (1 pt) Evaluate the limit
$\tan x$
$\lim_{x \to 0} \frac{1}{4x}$
11. (1 pt) If
$f(x) = 2\sin x$
$f(x) = \frac{1}{2 + \cos x}$
find $f'(x)$.
Find $f'(2)$.
12. (1 pt) If $f(x) = \frac{2\tan x}{x}$, find $f'(x)$.
Find $f'(3)$.
13. (1 pt) If
$f(x) = \frac{\tan x - 3}{2}$
find $f'(x)$
Find $f'(4)$.
14. (1 pt) Let
$f(x) = 9x \sin x \cos x$
$f'(\frac{\pi}{2}) = $
15. (1 pt) If $f(x) = \sin(x^3)$, find $f'(x)$.
Find $f'(1)$.
16. (1 pt) Let $f(x) = \frac{8cos(x) + 4sin(x)}{\sqrt{2}}$. Find $f'(x)$.
$f'(x) = \qquad \qquad$

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