Calculus Worksheet #4 Unit 6 page 1 _____

Find f '(x) for each of the following functions.

1. $f(x) = x \sin(x)$

2. $f(x) = x^2 \cos(x)$

3. $f(x) = \sin(3x) \cos(x + 1)$

4. $f(x) = 2x^3 \tan(5x)$

5. $f(x) = \dfrac{\tan(x)}{2x}$

6. $f(x) = \dfrac{\sin(x)}{x + 3}$

Find f '(x) and f ''(x) for each of the following functions.

7. $f(x) = \sin(3x)$

8. $f(x) = \cos(2x + 1)$

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Find f '(x) and f ''(x) for each of the following functions.

9. $f(x) = \sin(x^2)$

10. $f(x) = \cos(1 - x^3)$

11. $f(x) = \tan(5x - 1)$

12. $f(x) = \csc(4x)$

Find dy/dx for each of the following. (Use implicit differentiation.)

13. $\sin(x) + \sin(y) = 1$

14. $\sin(x + y) = x^2$

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Find dy/dx for each of the following. (Use implicit differentiation.)

15. $\sin(xy) = x^2$

16. $\tan(xy) = 1 - \cos(x)$

17. $\sec(x) + \csc(y) = x - 1$

18. $x \sin(y) = y \sin(x) + 1$

19. $\cos(x + y) = .5$

20. $2\sin(y) - \sin(2x) = 0$