

Calculus 1 Worksheet #20
Review

Note: Exam is Coming Up Soon !!

Directions: Find $\frac{dy}{dx}$

1. $y = \tan(4x^2)$

2. $y = (\sec x)(\cos x)$

3. $y = (\sec x)(\csc x)$

4. $y = \sin^2(3x^2) + \cos^2(-3x^2)$

5. $y = \frac{\cos x}{1 - \cos x}$

6. $y = 2 \ln(\cos^2 x)$

7. $y = 3e^{\ln(\cos x)}$

8. $y = x e^{2x}$

9. $y = x^2 \ln x$

10. $y = (\cos x)(\ln x)$

11. $y = e^x(\tan x)$

Directions: Find the limit.

12. $\lim_{x \rightarrow 0} \frac{x+1}{\cos x}$

13. $\lim_{x \rightarrow 0} \frac{x^2}{\sin^2(2x)}$

14. $\lim_{x \rightarrow 0} \frac{\tan 4x}{x}$

15. $\lim_{x \rightarrow 0} \frac{x}{\sec x}$

16. $\lim_{x \rightarrow 0} \frac{\sin 3x}{\sin x}$

17. $\lim_{h \rightarrow 0} \frac{(x+h)^6 - x^6}{h}$

18. $\lim_{x \rightarrow \infty} \frac{2x^2}{(2-x)(2+x)}$

Directions: Simplify.

19. $e^{2\ln(3x^2)}$

20. $\ln\left(3e^{\ln(x^2)}\right)$

21. $e^{\ln\left(\frac{1}{x}\right)}$

22. $\ln\left(\frac{1}{e}\right)$

23. $\log_4\left(\frac{1}{2}\right)$

24. $\ln(e^4)$

25. $\ln(1)$

26. $\log_{\frac{1}{5}}(1)$

27. $\ln e^{\ln e^2}$

Directions: Find dy/dx

28. $y = (4x+1)(1-x)^3$

29. $y = \frac{x}{\sqrt{1-x^2}}$

30. $y = t^2 + 3t + 1$ and $t = 5x - 2$

Answers:

1. $8x \sec^2(4x^2)$	2. 0	3. $\sec^2 x - \csc^2 x$	4. 0	5. $\frac{-\sin x}{(1 - \cos x)^2}$
6. $-4 \tan x$	7. $-3 \sin x$	8. $e^{2x}(2x+1)$	9. $x(2 \ln x + 1)$	10. $\frac{\cos x - x \sin x \ln x}{x}$
11. $e^x(\tan x + \sec^2 x)$	12. 1	13. $\frac{1}{4}$	14. 4	15. 0
16. 3	17. $6x^5$	18. -2	19. $9x^4$	20. $\ln(3x^2)$
21. $\frac{1}{x}$	22. -1	23. $-\frac{1}{2}$	24. 4	25. 0
26. 0	27. 2	28. $(1-x)^2(1-16x)$	29. $\frac{1}{\sqrt{(1-x^2)^3}}$	30. $5(10x-1)$