Determine the derivative for each of the following:

1. $y=\sqrt{x}+\dfrac{1}{\sqrt[3]{x^4}}$	$dy/dx=$
2. $y=e^{-2x}$	$dy/dx=$
3. $y=7^{x^2}$	$dy/dx=$
4. $y=\sec(2x)$	$dy/dx=$
5. $y=\sinh(x^2)$	$dy/dx=$
6. $y=\ln(\pi x)$	$dy/dx=$
7. $y=\tan(1-2x)$	$dy/dx=$
8. $y=\ln 2$	$dy/dx=$
9. $y=\cos^3 x$	$dy/dx=$
10. $y=\cot(3x^2)$	$dy/dx=$
11. $y=\log_3 x^2$	$dy/dx=$
12. $y=\dfrac{1}{7x+3}$	$dy/dx=$
13. $y=\arcsin(4x^2)$	$dy/dx=$
14. $y=\left(9x+\dfrac{2}{x}\right)^4$	$dy/dx=$
15. $y=\arctan(\sqrt{x})$	$dy/dx=$
16. $y=e^{\sin x}$	$dy/dx=$
17. $y=\ln(x^2+2x)$	$dy/dx=$
18. $y=\sin(e^x+x)$	$dy/dx=$
19. $y=(x+x^{-1})^4$	$dy/dx=$
20. $y=\sqrt[3]{3x^7+4x^3+3}$	$dy/dx=$

Find the derivative, $f'(x)$ for each of 21-29

21. $f(x) = (x^3 + \cosh x)(x + \ln x)$

22. $f(x) = \dfrac{\tan x}{x^2 + 1}$

23. $f(x) = \sin^3(\ln(x+3))$

24. $f(x) = x^3 + x^{\sqrt{3}} - x^{-2}$

25. $f(x) = e^{2x} \arcsin(x^2 + 1)$

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

27. $f(x) = x^{\tan x}$

28. $f(x) = \dfrac{(2x+1)^2(3x+2)^5(x+3)}{7x(5x-1)^3}$

29. $f(x) = \tan^{-1}(\sin(x^2))$

30. Find $\dfrac{dy}{dx}$ and $\dfrac{d^2y}{dx^2}$ where $y = \dfrac{\sin x}{x^2 + 1}$

31. If $y = e^{3x}$ then find $f'(x)$, $f''(x)$, $f'''(x)$, $f^{(4)}(x)$.

32. Give an equation of the tangent line to $xy^2 + 2x^2y = 8$ at the point (1,2).

33. Use the definition of derivative to find the derivative of $y = x^2 + 2x$

34. Use the definition of the derivative to find $f'(1)$ where $f(x) = \sqrt{3+x}$.

35. Find an equation of the tangent line to $y = \sin^3(x)$ at $x = \dfrac{\pi}{4}$.