

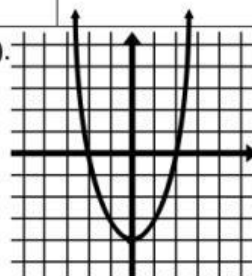
Basic Derivatives Practice Worksheet

Try your best on this and finish it for homework. We will go over the solutions and I will check for completeness next week.

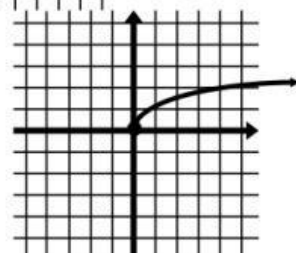
Rewrite each function, differentiate, and then simplify (no negative exponents!)

Function	Rewrite	Differentiate	Simplify
A. $y = \frac{5}{2x^3}$			
B. $y = \frac{5}{(2x)^3}$			
C. $y = \frac{7}{3x^{-2}}$			
D. $y = \sqrt[6]{x}$			
E. $y = \frac{1}{x^2} + \frac{1}{x^3}$			
F. $y = \frac{2}{\sqrt[3]{x}} - \frac{3}{x^2}$			

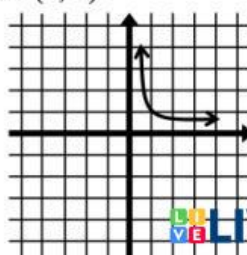
G. Find the equation of the line tangent to $y = x^2 - 4$ at the point (1, -3).



H. Find the equation of the line tangent to $y = \sqrt{x}$ at the point (4, 2).



I. Find the equation of the line tangent to $y = x^{-\frac{1}{2}}$ at the point (1, 1).



The Constant Rule The derivative of a constant function is zero. $\frac{d}{dx}[c] = 0$	The Power Rule If n is a rational number, then the function $f(x) = x^n$ is differentiable and... $\frac{d}{dx}[x^n] = n \cdot x^{n-1}$
The Constant Multiple Rule If f is a differentiable function and c is a real number, then $c \cdot f$ is differentiable and... $\frac{d}{dx}[c \cdot f(x)] = c \cdot f'(x)$	The Sum and Difference Rules The sum (or difference) of two differentiable functions, f and g, is differentiable and... $\frac{d}{dx}[f(x) \pm g(x)] = f'(x) \pm g'(x)$

Use an applicable rule to find each derivative.

1. $f(x) = x^5 - 2x^3 + 7x - 12$	2. $g(x) = 3x^2 + 2x + 1$	3. $s(t) = -16t^2 + 70t + 500$
4. $y = \frac{2}{x}$	5. $y = 2\sqrt{x}$	6. $y = \frac{4x^2}{5}$
7. $y = -\frac{3}{2}x$	8. $y = \frac{1}{2\sqrt[3]{x^2}}$	9. $f(x) = x^3 - 4x + 5$
10. $g(x) = -\frac{x^4}{2} + 3x^3 - 2x$	11. $h(x) = \sqrt[5]{x} - \sqrt[4]{x} - \frac{1}{x^{3/2}}$	12. $f(x) = -\frac{1}{2} + \frac{7}{5}x^2$
13. $f(x) = x^2 + 5 - 3x^{-2}$	14. $h(s) = s^{4/3} - s^{2/3}$	15. $F(T) = T^{2/3} - T^{1/3} + 4$
16. $y = 3x(6x - 5x^2)$	17. $f(x) = \frac{x^3 - 3x^2 + 4}{x^2}$	18. $h(x) = \frac{2x^2 - 3x + 1}{x}$