

AB: PROBLEM SET #2

1-2: Find the average rate of change of y with respect to x over the given interval. Show your work!!

1. $y = x^3 - 1$ $[-2, 3]$

2. $f(x) = \frac{1}{x}$ $[-3, -1]$

3. A table of values for a function $f(x)$ is written below. Find an approximation for $f'(9)$. Show how you got your answer!!

x	3	5	9	14
$f(x)$	-8	12	-1	15

4-5: Use the definition of the derivative $f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$ to find $f'(x)$ for each function.

Show all work!!

4. $f(x) = \frac{1}{x^2}$

5. $f(x) = \frac{3}{x-2}$

7-9: Use the derivative rules to find the derivative of each. Show steps!!

6. $y = \frac{x^4 - 1}{x}$

7. $f(x) = (4x - 2x^2)(3x - 5)$

8. $f(x) = \frac{5x+2}{x^2-1}$

9-11: Use the following table to determine each. Be sure to show all your work!!

x	$f(x)$	$g(x)$	$f'(x)$	$g'(x)$
0	1	1	5	1/3
1	3	-4	-1/3	-8/3

9. If $h(x) = f(x)g(x)$, find $h'(0)$

10. If $k(x) = 2f(x) + g(x)$, find $k'(0)$

11. If $j(x) = \frac{f(x)}{g(x)}$, find $j'(1)$