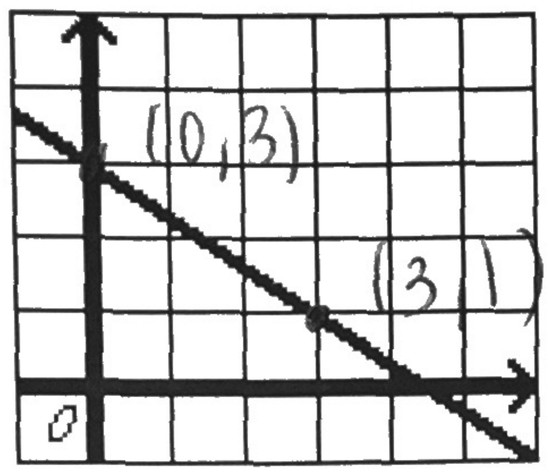
Name: KEY Date: _____ Period: _____

Rate of Change

Find the average rate of change over the given intervals

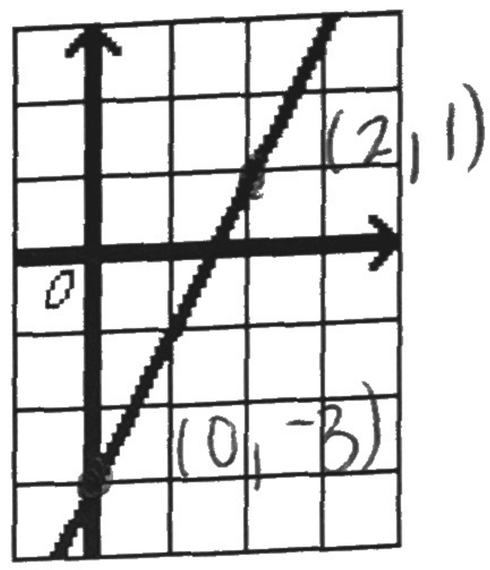
1.



Find the rate of change over the interval [0, 3]

$\frac{3-1}{0-3} = \boxed{\frac{2}{-3}}$

2.



Find the rate of change over the interval [0, 2]

$\frac{1-(-3)}{2-0} = \frac{4}{2} = \boxed{2}$

3. Find the rate of change of the function $f(x) = -3x + 7$ on the interval [1, 5]

$f(1) = -3(1)+7 = 4$

$f(5) = -3(5)+7 = -15+7 = -8$

$ROC = \frac{-8-4}{5-1} = \frac{-12}{4} = \boxed{-3}$

4. Find the rate of change of the function $f(x) = 2\left(\frac{1}{3}\right)^x$ on the interval [-2, 2]

$f(-2) = 2\left(\frac{1}{3}\right)^{-2} = 18$

$f(2) = 2\left(\frac{1}{3}\right)^{2} = \frac{2}{9}$

$\frac{18-\frac{2}{9}}{-2-(+2)} = \frac{160/9}{-4} = \boxed{\frac{-40}{9}}$

5. Find the rate of change of the function $f(x) = 4x + 1$ on the interval [-3, 2]

$f(-3) = 4(-3)+1 = -11$

$f(2) = 4(2)+1 = 9$

$\frac{-11-9}{-3-2} = \frac{-20}{-5}$

$\boxed{ROC = 4}$

6. Find the rate of change of the function $f(x) = -5(3)^x$ on the interval [0, 8]

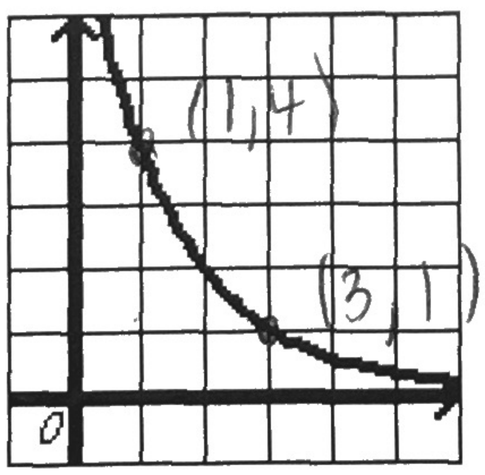
$f(0) = -5(3)^0 = -5$

$f(8) = -5(3)^8 = -32805$

$\frac{-32805-(-5)}{8-0}$

$\boxed{ROC = -4100}$

7.



Find the rate of change over the interval [1, 3]

$\frac{4-1}{1-3} = \boxed{\frac{3}{-2}}$

8.

x	f(x)
4	7
6	11
8	15
10	19

Find the rate of change over the interval [6, 10]

$\frac{19-11}{10-6} = \frac{8}{4} = \boxed{2}$