

Name: _____ Date: _____

Average Rate of Change

A _____ that describes how one _____ changes as another _____ changes.

We know it as _____.

_____ have a constant rate of change, meaning values increase or decrease at the _____ rate over a period of time.

Positive R.O.C:	Negative R.O.C:
Zero R.O.C:	Undefined R.O.C:

Formula using function notation:

<p>1. $f(x) = 2x^2 - 3$ from $[2, 4]$.</p>	<p>2. $f(x) = -4x + 10$ from $[-1, 3]$.</p>																								
<p>3. a. Find the rate of change from day 1 to 2.</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px 10px;">DAYS (X)</th> <th style="padding: 2px 10px;">AMOUNT OF BACTERIA F(X)</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">1</td><td style="text-align: center;">19</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">30</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">48</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">76</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">121</td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">192</td></tr> </tbody> </table> <p>b. Find the rate of change from day 2 to 5.</p>	DAYS (X)	AMOUNT OF BACTERIA F(X)	1	19	2	30	3	48	4	76	5	121	6	192	<p>4. In 2008, about 66 million U.S. households had both landline phones & cell phones. Find the rate of change from 2008 – 2011.</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px 10px;">YEAR (X)</th> <th style="padding: 2px 10px;">HOUSEHOLDS IN MILLIONS F(X)</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">2008</td><td style="text-align: center;">66</td></tr> <tr><td style="text-align: center;">2009</td><td style="text-align: center;">61</td></tr> <tr><td style="text-align: center;">2010</td><td style="text-align: center;">56</td></tr> <tr><td style="text-align: center;">2011</td><td style="text-align: center;">51</td></tr> </tbody> </table> <p>What does this mean?</p>	YEAR (X)	HOUSEHOLDS IN MILLIONS F(X)	2008	66	2009	61	2010	56	2011	51
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<p>5. a. Find the average rate of change from $0 \leq x \leq 1$</p> <div style="text-align: center;"> </div> <p>b. Find the average rate of change from $4 \leq x \leq 5$</p>	<p>5. Find the average rate of change from $[0,1]$</p> <div style="text-align: center;"> </div> <p>b. Find the average rate of change from $[4,5]$</p>																								

1. Find the rate of change of Pete's height from 3 to 5 years.

Time (years)	1	2	3	4	5	6
Height(in.)	27	35	37	42	45	49

2. For $f(x) = -6x - 2$, find the rate of change on the interval $[-2, 4]$.

3. For $f(x) = x^2 + 4x + 1$, find the rate of change on the interval $[-2, 4]$.

4. You and a friend are trying to decide which theater to go to for a Friday night movie. NCG charges \$7 for the movie ticket and \$3 per food item. Regal's prices are represented by the table.

Write an equation for NCG and Regal. Compare their rates of change and initial cost.

x	g(x)
0	4
1	8
2	12
3	16
4	20

NCG: $f(x) =$

Regal: $g(x) =$

Characteristic NCG	<, >, or =	Characteristic of Regal
y-intercept of $f(x) =$		y-intercept of $g(x) =$
$f(4) =$		$g(4) =$
Rate of Change of $f(x) =$		Rate of Change of $g(x) =$