

Notes 2.5 – Linear & Exponential Functions

Warmup – Graphing Practice

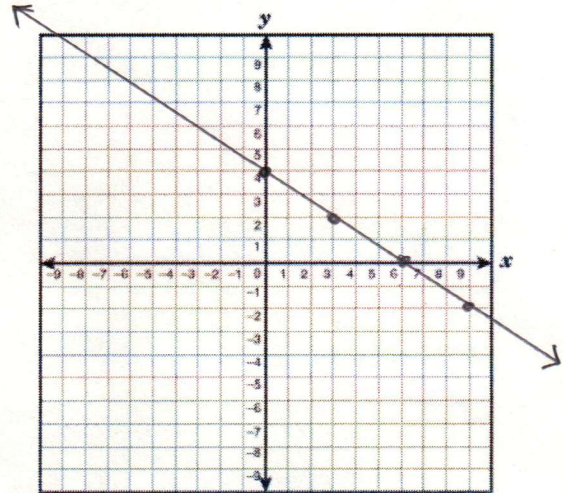
Graph each linear equation on the given graph. Make a table if you need one.

a) $y = -\frac{2}{3}x + 4$

$m = -\frac{2}{3}$

$(0, 4)$

x	y
-3	6
0	4
3	2
6	0

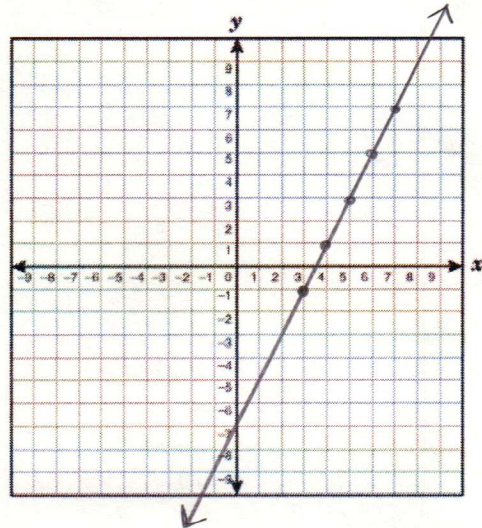


b) $y = 2(x - 3) - 1$

$m = 2$

$(3, -1)$

x	y
-2	-11
-1	-9
0	-7
1	-5
2	-3

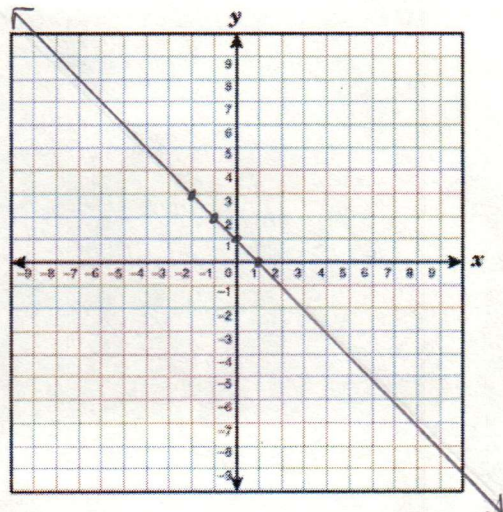


c) $y = -1(x + 2) + 3$

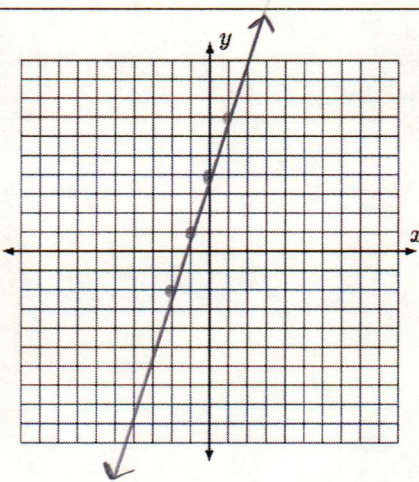
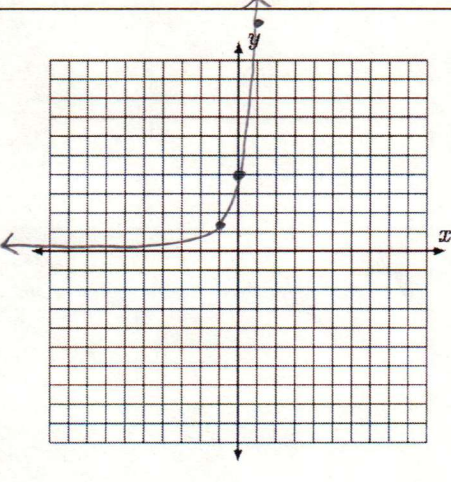
$m = -1$

$(-2, 3)$

x	y
-2	3
-1	2
0	1
1	0
2	-1



Lesson – Graphing and Comparing Growth

Equation	$y = 3x + 4$	$y = 4(3)^x$																								
Type of Function	linear	exponential																								
Table	<table border="1"> <tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td></tr> <tr><td>y</td><td>-2</td><td>1</td><td>4</td><td>7</td><td>10</td></tr> </table>	x	-2	-1	0	1	2	y	-2	1	4	7	10	<table border="1"> <tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>y</td><td>$\frac{4}{3}$</td><td>4</td><td>12</td><td>36</td><td>108</td></tr> </table>	x	-1	0	1	2	3	y	$\frac{4}{3}$	4	12	36	108
x	-2	-1	0	1	2																					
y	-2	1	4	7	10																					
x	-1	0	1	2	3																					
y	$\frac{4}{3}$	4	12	36	108																					
Rate of Change	+ 3	• 3																								
y-intercept	(0,4)	(0,4)																								
Graph																										
Which is growing faster?	$y = 4(3)^x$ is growing faster																									

Things to consider when comparing:

Do the graphs have the same scale?

If an exponential graph is a growth or decay graph.

Will exponential graphs always grow faster? Explain.

No, a decay graph is getting slower and slower over time.

Two rival tech companies, Calcu-App and CompuTech, are trying to grow their business. Calcu-App had a net income of 5 million dollars in 2010, while CompuTech had a net income of 2 million dollars. Calcu-App plans to increase net income by 0.5 million dollars per year, while CompuTech plans to increase its net income by 15% each year.

Calcu-App			CompuTech		
Table					
year	t	\$	year	t	\$
2010	0	5 million	2010	0	2 million
2011	1	5.5 million	2011	1	2.3 million
2012	2	6 million	2012	2	2,645,000
2013	3	6.5 million	2013	3	3,041,750
2014	4	7 million	2014	4	3,498,012.50
2015	5	7.5 million	2015	5	4,022,714.38
Equation					
$y = .5t + 5$ (y million) $y = 500,000t + 5,000,000$			$y = 2,000,000(1.15)^t$		
Observations					
linear rate of change / slope = .5 or 500,000			exponential common ratio = 1.15		

What company would you choose to invest in? Why?

Always be specific and use math to support your answer.

Graph

