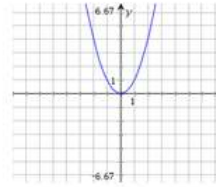
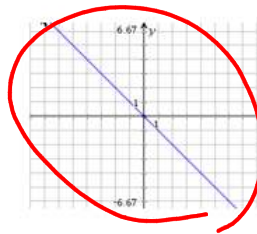
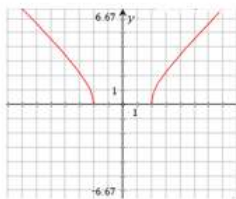
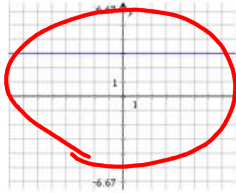
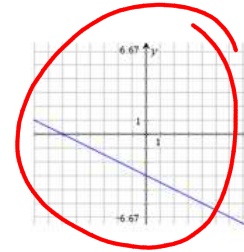
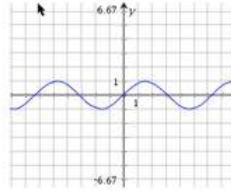
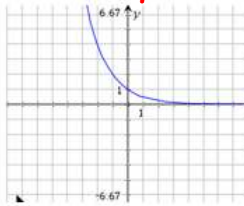
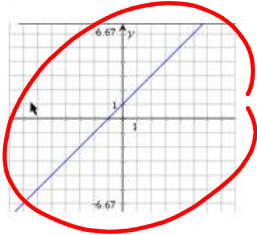


#1 - Linear Functions Graph a Line

Circle the functions that are linear.

$y = .5^x$



$y = x^2$

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#2 - When written in function form (usually solved for y), the x has an exponent of 1.

$y = mx + b$

Identify which are functions.

1)  $y + x = 10$

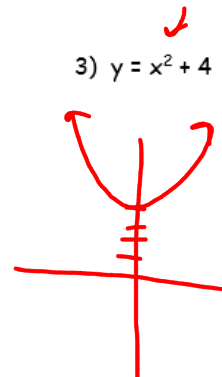
$$\begin{array}{r} -x \quad -x \\ \hline y = -x + 10 \end{array}$$

2)  $xy = 9$

$y = \frac{9}{x}$

$y = 9x^{-1}$

3)  $y = x^2 + 4$



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4)  ~~$y = \sqrt{x}$~~

$y = mx + b$

5)  ~~$\frac{y}{x} = 9$~~   
 $y = 9x$

6)  $3x = y + 5$   
 $\frac{-5}{-5} \quad \frac{-5}{-5}$   
 $y = 3x - 5$

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#3 - If given a table, the ratio of the change in y over the change in x is the same (slope)  $y = mx + b$

For each, write the equation and identify if it is linear, quadratic or other.

1.

x	y
1	8
2	16
3	24
4	32

$m = \frac{\Delta y}{\Delta x} = 8$   
 Equation:  $y = 8x$   
 Linear? **Yes**

2.

x	y
1	24
2	12
3	8
4	6

Equation:  $xy = 24$   
 Linear? **No**

$\frac{xy}{x} = \frac{24}{x}$   
 $y = \frac{24}{x}$   
 $y = 24x^{-1}$

3.

x	y
0	2
-1	3
-2	4
-3	5
-4	6

$m = \frac{\Delta y}{\Delta x} = \frac{1}{-1} = -1$   
 Equation:  $y = -x + 2$   
 Linear?

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<p>4.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>0</td><td>3</td></tr> <tr><td>1</td><td>5</td></tr> <tr><td>2</td><td>7</td></tr> <tr><td>3</td><td>9</td></tr> </tbody> </table> <p style="margin-left: 10px;"> <math>1 &lt; \dots &gt; 2</math>  <math>1 &lt; \dots &gt; 2</math>  <math>1 &lt; \dots &gt; 2</math> </p> <p style="margin-left: 20px;"><math>m = \frac{2}{1}</math></p> <p>Equation: <math>Y = 2x + 3</math></p> <p>Linear? Yes</p>	x	y	0	3	1	5	2	7	3	9	<p>5.</p> <p style="text-align: center; color: green;"><math>-3 \cup = -2</math></p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>3</td><td>-2</td></tr> <tr><td>6</td><td>-5</td></tr> <tr><td>9</td><td>-8</td></tr> <tr><td>12</td><td>-11</td></tr> </tbody> </table> <p style="margin-left: 10px;"> <math>3 &lt; \dots &gt; -3</math>  <math>3 &lt; \dots &gt; -3</math>  <math>3 &lt; \dots &gt; -3</math> </p> <p style="margin-left: 20px;"><math>m = \frac{-3}{3} = -1</math></p> <p>Equation: <math>Y = -1x + 1</math></p> <p>Linear? Yes</p>	x	y	3	-2	6	-5	9	-8	12	-11	<p>6.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>3</td><td>9</td></tr> <tr><td>5</td><td>25</td></tr> <tr><td>7</td><td>49</td></tr> <tr><td>9</td><td>81</td></tr> </tbody> </table> <p style="margin-left: 10px;"> <math>2 &lt; \dots &gt; +16</math>  <math>2 &lt; \dots &gt; +24</math>  <math>2 &lt; \dots &gt; +32</math> </p> <p>Equation: <math>Y = x^2</math></p> <p>Linear? No</p>	x	y	3	9	5	25	7	49	9	81
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