

1. Clarissa goes to Foodland and that apples cost \$1.50 per pound.

<p>A) Fill in the table, where x represents the pounds of apples and $f(x)$ represents the price she pays for x pounds of apples.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">x</th> <th style="padding: 5px;">$f(x)$</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">0</td> <td style="padding: 5px;">0</td> </tr> <tr> <td style="padding: 5px;">1</td> <td style="padding: 5px;">\$1.50</td> </tr> <tr> <td style="padding: 5px;">2</td> <td style="padding: 5px;">\$3.00</td> </tr> <tr> <td style="padding: 5px;">3</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">4</td> <td style="padding: 5px;"></td> </tr> </tbody> </table>	x	$f(x)$	0	0	1	\$1.50	2	\$3.00	3		4		<p>B) Is the price of apples a linear or nonlinear function of the number of pounds purchased? Why?</p>
x	$f(x)$												
0	0												
1	\$1.50												
2	\$3.00												
3													
4													
<p>C) Clarissa’s grandma’s apple pie recipe calls for 1.5 pounds of apples per pie. She needs to make six pies. What is her total cost for the amount of apples she needs to buy?</p>	<p>D) What is the maximum number of pies she could make if she had \$17 with which to buy apples? (Note: assume her grandma has all other necessary ingredients.)</p>												

2. On the average your car gets 30.1 miles to each gallon of gas.

<p>A) Complete the table: x represents the number of gallons of gas and $f(x)$ represents the average number of miles driven.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">x</th> <th style="padding: 5px;">$f(x)$</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">0</td> <td style="padding: 5px;">0</td> </tr> <tr> <td style="padding: 5px;">1</td> <td style="padding: 5px;">30.1</td> </tr> <tr> <td style="padding: 5px;">2</td> <td style="padding: 5px;">60.2</td> </tr> <tr> <td style="padding: 5px;">3</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">4</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">5</td> <td style="padding: 5px;"></td> </tr> </tbody> </table>	x	$f(x)$	0	0	1	30.1	2	60.2	3		4		5		<p>B) Is the average number of miles driven a linear or nonlinear function of the number of gallons of gas? Why?</p>
x	$f(x)$														
0	0														
1	30.1														
2	60.2														
3															
4															
5															
<p>C) How many gallons of gas must your car hold if you’d like to drive 400 miles between fill ups?</p>	<p>D) On the average how many miles can you travel on seven gallons of gas?</p>														

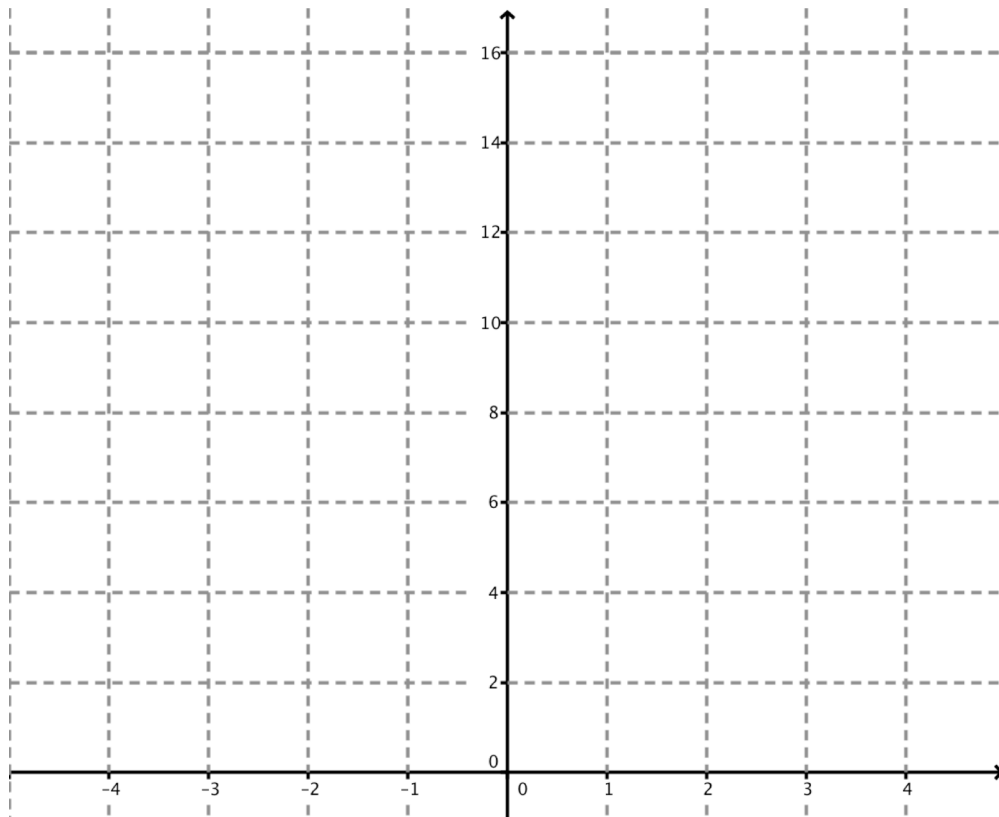
3. Answer the following questions based on the function definition $f(x) = x^2$.

A) Fill in the table for the function $f(x) = x^2$

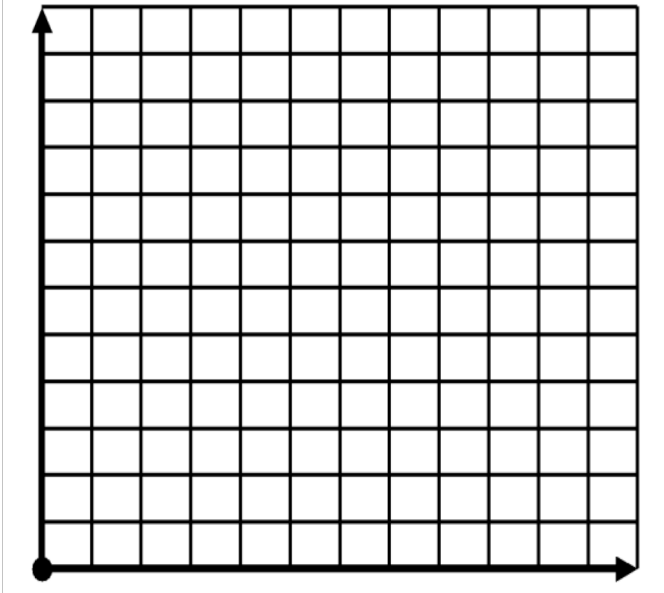
x	$f(x) = x^2$
-4	
-3	
-2	
-1	
0	
1	
2	
3	
4	

C) What do you notice about the shape of the graph? Is f linear or non-linear? Explain.

B) Graph the function.

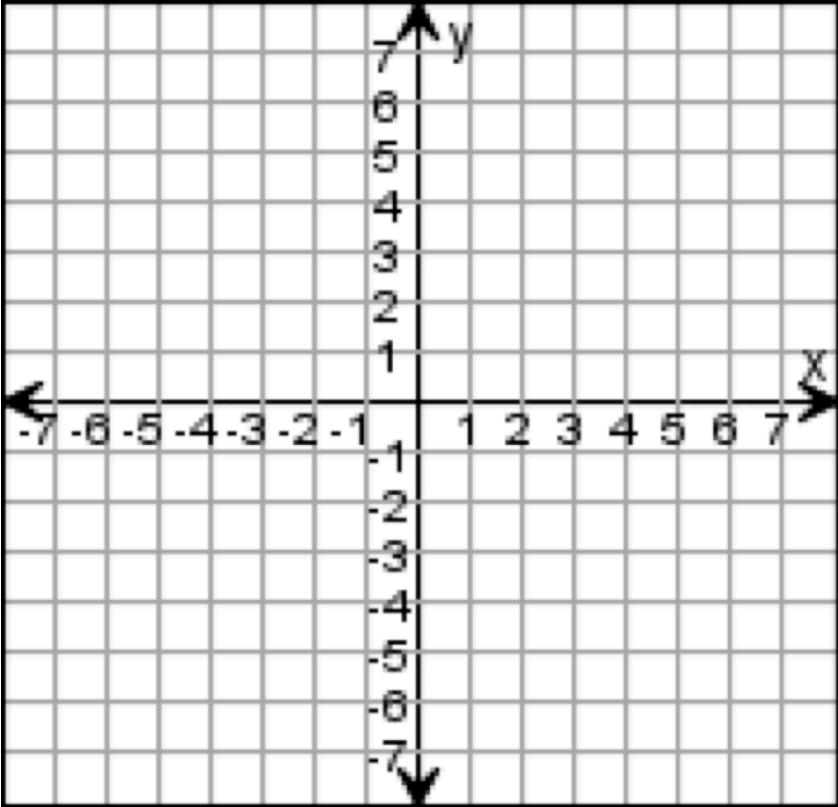


1. A caterpillar fell down a well and tried to climb back up. During each day, it would climb 5 feet up at a constant rate, but each night it slipped back 0.5 feet, again at a constant rate.

<p>A) Fill out the rest of the table below, where x represents the start of each day and $f(x)$ represents the caterpillar's distance from the bottom of the well at the start of day x.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">x</th> <th style="padding: 5px;">$f(x)$</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">1</td> <td style="padding: 5px;">0</td> </tr> <tr> <td style="padding: 5px;">2</td> <td style="padding: 5px;">4.5</td> </tr> <tr> <td style="padding: 5px;">3</td> <td style="padding: 5px;">9</td> </tr> <tr> <td style="padding: 5px;">4</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">5</td> <td style="padding: 5px;"></td> </tr> </tbody> </table>	x	$f(x)$	1	0	2	4.5	3	9	4		5		<p>B) Is the caterpillar's distance from the bottom of the well a linear or nonlinear function of time? Why?</p>
x	$f(x)$												
1	0												
2	4.5												
3	9												
4													
5													
<p>C) What is the domain and range of the function f?</p>	<p>D) About how long does it take the caterpillar to get out of the well, if it originally fell 50 feet into the well?</p>												
<p>E) Graph the distance the caterpillar travelled versus time.</p> <div style="text-align: center; margin: 10px 0;">  </div>													

2. Answer the following questions using the following functions:

$f(x) = 3x$ $g(x) = x^2 + 1$ $h(x) = \frac{1}{2}x + 1$

<p>A) Complete the table for the function $f(x)$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 50%;">x</th> <th style="width: 50%;">f(x)</th> </tr> </thead> <tbody> <tr><td>-2</td><td></td></tr> <tr><td>-1</td><td></td></tr> <tr><td>0</td><td></td></tr> <tr><td>1</td><td></td></tr> <tr><td>2</td><td></td></tr> </tbody> </table>	x	f(x)	-2		-1		0		1		2		<p>B) Complete the table for the function $g(x)$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 50%;">x</th> <th style="width: 50%;">g(x)</th> </tr> </thead> <tbody> <tr><td>-2</td><td></td></tr> <tr><td>-1</td><td></td></tr> <tr><td>0</td><td></td></tr> <tr><td>1</td><td></td></tr> <tr><td>2</td><td></td></tr> </tbody> </table>	x	g(x)	-2		-1		0		1		2		<p>C) Complete the table for the function $h(x)$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 50%;">x</th> <th style="width: 50%;">h(x)</th> </tr> </thead> <tbody> <tr><td>-4</td><td></td></tr> <tr><td>-2</td><td></td></tr> <tr><td>0</td><td></td></tr> <tr><td>2</td><td></td></tr> <tr><td>4</td><td></td></tr> <tr><td>6</td><td></td></tr> </tbody> </table>	x	h(x)	-4		-2		0		2		4		6	
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6																																								
<p>D) Graph all three functions.</p> <div style="text-align: center;">  </div>	<p>E) Which two graphs have similar shapes? Why do you think this is true?</p>																																							
<p>F) How does the shape of $g(x)$ differ from the other graphs?</p>																																								