

1.1 Multiple Representations

PRE-CALCULUS

Write your questions here!

VANG

VERBALLY	ALGEBRAICALLY												
Bob has 3 cakes and bakes 4 cakes every 2 hours.													
NUMERICALLY	GRAPHICALLY												
<table border="1"> <tr><td></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> <tr><td>3</td><td></td></tr> <tr><td>4</td><td></td></tr> </table>			0		1		2		3		4		
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VERBALLY	ALGEBRAICALLY												
	$A(r) = \pi r^2$												
NUMERICALLY	GRAPHICALLY												
<table border="1"> <tr><td></td><td></td></tr> <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> </table>			-2		-1		0		1		2		
-2													
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Function Notation

$$f(x) = 9 - 4x$$

a. $f(-3) =$

b. $f(x) = 10$

c. $f(h) =$

d. $f(x + 2) =$

Mr. Bean enters a 7 day Pokémon competition. The function below models Mr. Bean's total cards over the tournament. $C(t) = \frac{1}{3}t^3 - 2t^2 - 2t + 50$.

What does $C(3)$ mean? Find it.

What does $C(t) = 40$ mean? Estimate it.

What does the y-intercept mean?

What is the lowest amount of cards that Mr. Bean had?

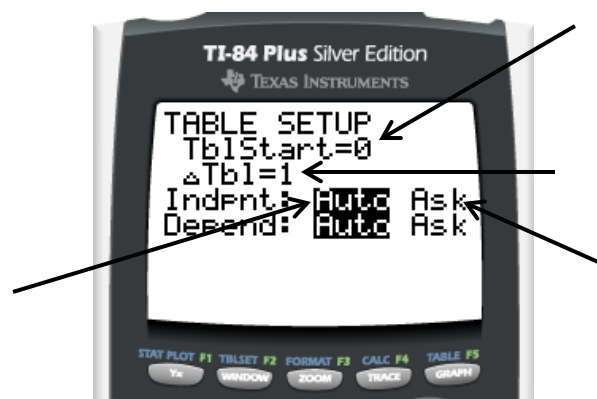
CALCULATOR

ZOOM

6: ZStandard

0: ZoomFit

TBLSET (2nd WINDOW)



Mr. Brust has a one day layover in Vegas. He decides to gamble continuously for that time period. The following function represents his total money over that day where t is measured in hours.

$$B(t) = -0.02t^4 + 19t + 180$$

What does $B(12)$ mean? Find it.

What does $B(t) = 80$ mean? Estimate it.

What does the y-intercept mean? What does the x-intercept mean?

What is the most money that Mr. Brust had?

SUMMARY:

Now,
summarize
your notes
here!



1.1 Multiple Representations

PRACTICE

Fill in the missing parts!

1.

<p>VERBALLY</p> <p>7 gallon tank leaks gas 1 gallon every 3 hours.</p>	<p>ALGEBRAICALLY</p>										
<p>NUMERICALLY</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%;"></td></tr> <tr><td style="text-align: center;">0</td><td></td></tr> <tr><td style="text-align: center;">2</td><td></td></tr> <tr><td style="text-align: center;">6</td><td></td></tr> <tr><td></td><td style="text-align: center;">6</td></tr> </table>			0		2		6			6	<p>GRAPHICALLY</p>
0											
2											
6											
	6										

2.

<p>VERBALLY</p>	<p>ALGEBRAICALLY</p> $p(t) = \frac{1}{3}t - 4$										
<p>NUMERICALLY</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%;"></td></tr> <tr><td style="text-align: center;">0</td><td></td></tr> <tr><td style="text-align: center;">7</td><td></td></tr> <tr><td style="text-align: center;">24</td><td></td></tr> <tr><td></td><td style="text-align: center;">-34</td></tr> </table>			0		7		24			-34	<p>GRAPHICALLY</p>
0											
7											
24											
	-34										

3.

<p>VERBALLY</p>	<p>ALGEBRAICALLY</p>										
<p>NUMERICALLY</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Time (hours)</th> <th style="width: 50%;">Grade (%)</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">2</td><td style="text-align: center;">40</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">50</td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">60</td></tr> <tr><td style="text-align: center;">8</td><td style="text-align: center;">70</td></tr> </tbody> </table>	Time (hours)	Grade (%)	2	40	4	50	6	60	8	70	<p>GRAPHICALLY</p>
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If $f(x) = 4 - 3x$ and $g(x) = 2x^2 - 3x + 1$ then find...

5. $f(4) =$

6. $g(-5) =$

7. $g(a) =$

8. $f(m + 1) =$

If $f(x) = 4 - 3x$ and $g(x) = 2x^2 - 3x + 1$ then find...

9. $g(x + 2) =$

10. $f(x) = 10$

11. $f(x) = 21$

12. $f(0) + g(1) =$

If $h(x) = \frac{2x}{x+1}$ and $k(x) = \sqrt{2x - 5}$ then find...

13. $h(4) =$

14. $k(5) =$

15. $h(m) =$

16. $k(m + 1) =$

17. $h(x + 2) =$

18. $k(x) = 10$

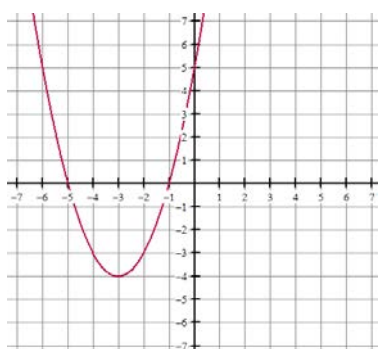
19. $h(x) = 4$

20. $h(0) + k(15) =$

Review Skillz

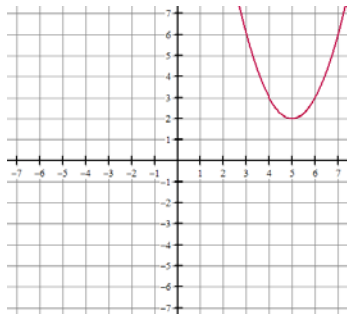
Write the equation of the quadratic function in vertex form, $y = a(x - h)^2 + k$. See example for a refresher!

Example:

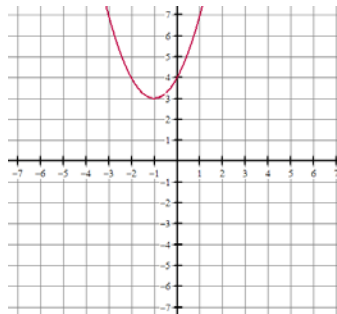


$$y = (x + 3)^2 - 4$$

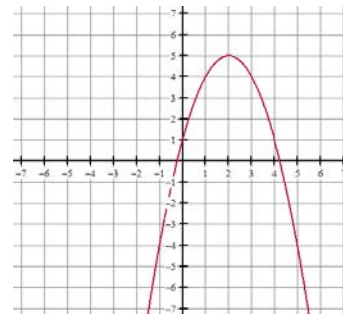
1.



2.



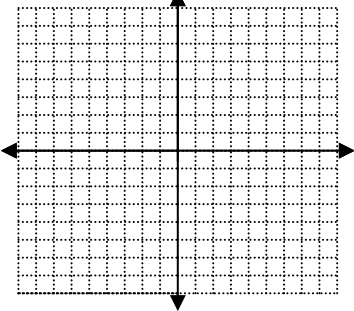
3.



1.1 Multiple Representations

APPLICATION

1.

VERBALLY		ALGEBRAICALLY								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Distance (miles)</th> <th style="text-align: center;">Gas (liters)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">20</td> <td style="text-align: center;">40</td> </tr> <tr> <td style="text-align: center;">25</td> <td style="text-align: center;">34</td> </tr> <tr> <td style="text-align: center;">30</td> <td style="text-align: center;">28</td> </tr> </tbody> </table>		Distance (miles)	Gas (liters)	20	40	25	34	30	28	<p style="text-align: center;">GRAPHICALLY</p> 
Distance (miles)	Gas (liters)									
20	40									
25	34									
30	28									

2. If $g(x) = -x^2 + 3x + 1$ then find...

a. $g(-2) =$

b. $g(x + 2) =$

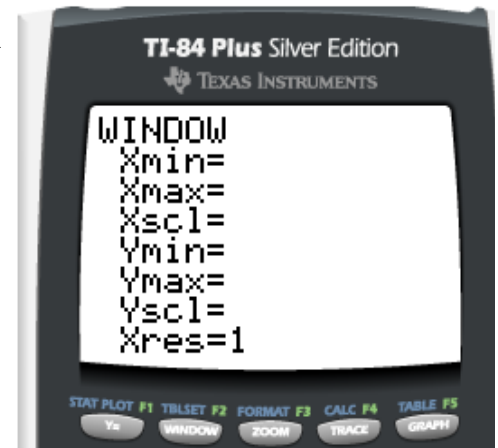
3. From 1994 to 2003, the amount of athletic equipment E , in millions of dollars, sold domestically can be modeled by $E(t) = -10t^3 + 140t^2 - 20t + 18150$ where t is the number of years since 1994.

a. Graph with a friendly window. Record the window here →

b. What does $E(5)$ mean? Find it!

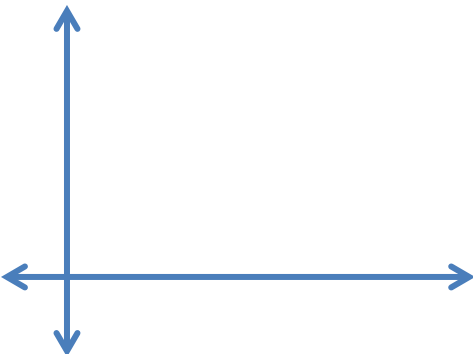
c. Approximate the maximum sales.

d. What does the y -intercept mean?

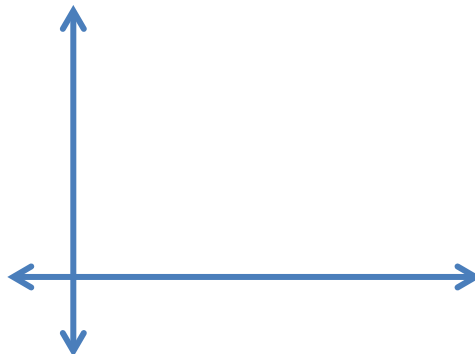


4. Sketch a graph for each the verbal situation given below. Make sure to label the axis of your graph!

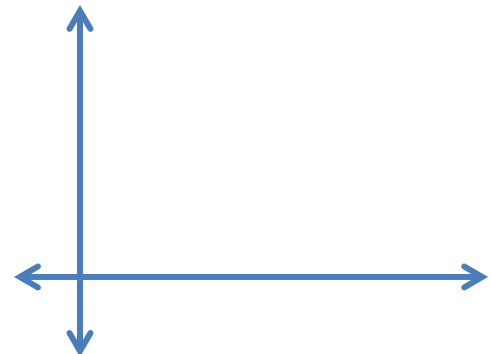
a. You get a large cup of coffee from McDonalds. Graph the temperature of the coffee in the cup vs. time.



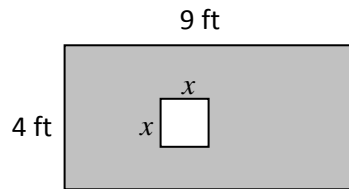
b. While at a county fair, you go on a Ferris wheel ride. Graph your height above ground vs. time.



c. Your three-year old cousin asks you to push him on a swing at the park. Graph his height vs. time.



Bob the builder wants to paint a wall (shaded region below). Unfortunately, he does not know how big his square window is going to be. Help a builder out.

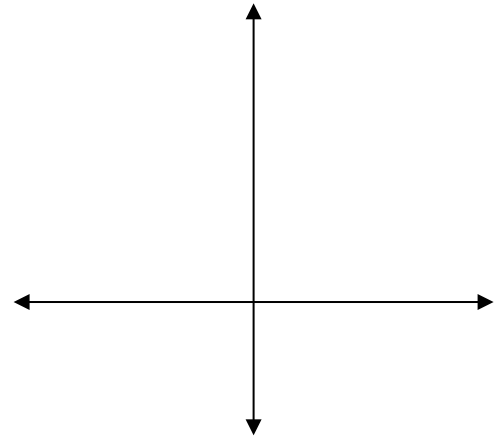


5. Explain why the function $A(x) = 36 - x^2$ represents the shaded area in the figure above.

6. Draw a rough sketch of the graph.

7. What does the x -axis represent?

8. What does the y -axis represent?



9. If the square has sides of 3 ft, what is the area of the shaded region?

10. If the area of the shaded region is 10, what are the lengths of the sides of the square?

11. What are the x -intercepts?

12. What do the x -intercepts represent in this problem?

13. Are the x -intercepts possible solutions for this problem? Why/Why not?

14. Fill in the table. Describe what happens to $A(x)$ as x becomes infinitely small. →

x	$A(x)$
2	
1	
0.5	
0.25	
0.1	