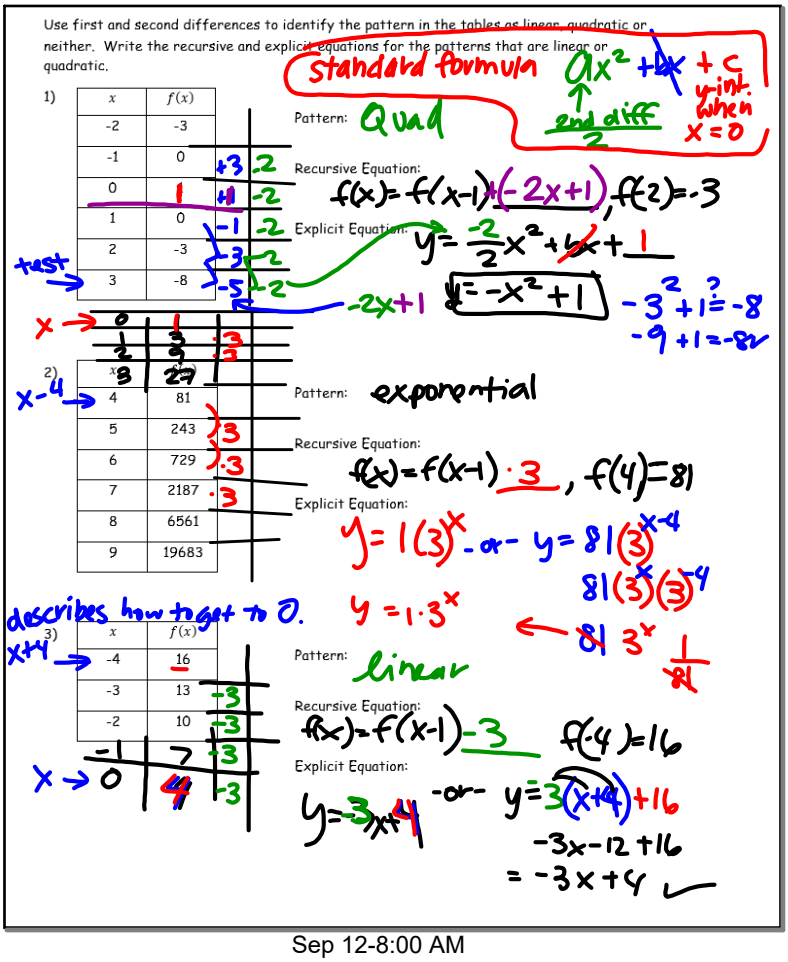
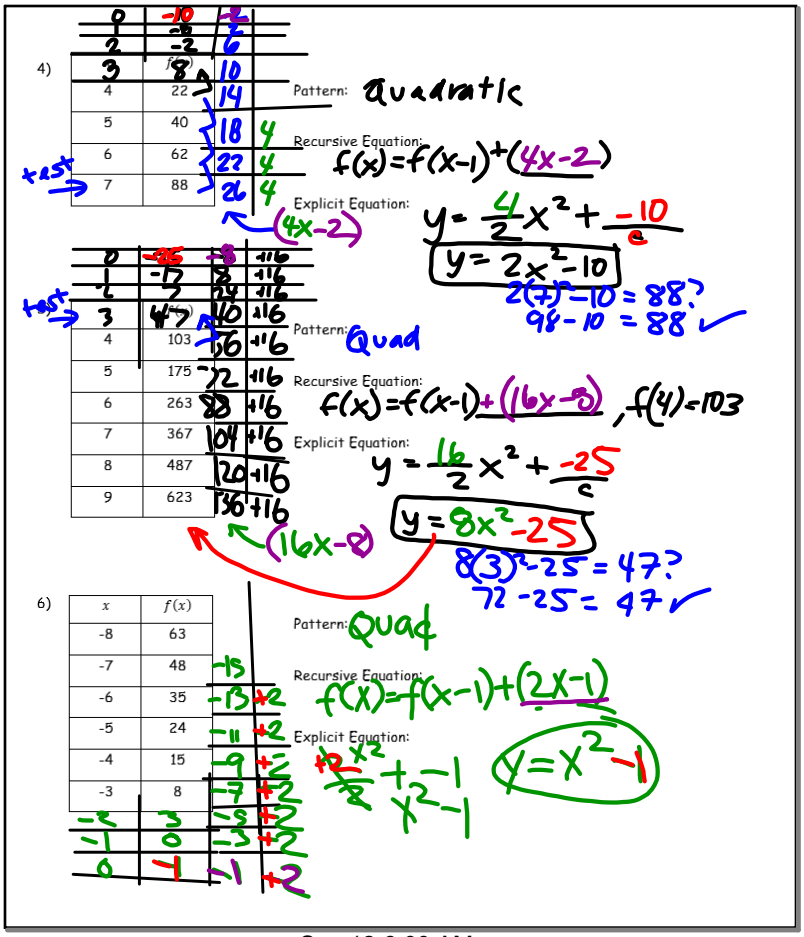


Sep 12-8:00 AM



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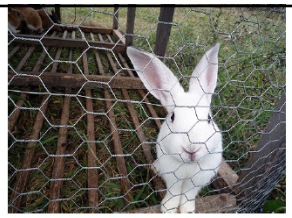
SECONDARY MATH II // MODULE 1
QUADRATIC FUNCTIONS – 1.4

1.4 Rabbit Run

A Solidify Understanding Task



Misha has a new rabbit that she named "Wascal". She wants to build Wascal a pen so that the rabbit has space to move around safely. Misha has purchased a 72 foot roll of fencing to build a rectangular pen.

1. If Misha uses the whole roll of fencing, what are some of the possible dimensions of the pen?

2. If Misha wants a pen with the largest possible area, what dimensions should she use for the sides? Justify your answer.

Aug 31-10:58 AM

4. What kind of function is this? How do you know?

5. How does this function compare to the second type of block **I** logos in *I Rule*?

Aug 31-10:59 AM

SECONDARY MATH II // MODULE 1
QUADRATIC FUNCTIONS - 1.4

1.4

READY, SET, GO! Name Period Date

READY
Topic: Applying slope formula

$\frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$

Calculate the slope of the line between the given points. Use your answer to indicate which line is the steepest.

1. A (-3, 7) B (-5, 17)

$\frac{7-17}{-3+5} = \frac{-10}{2} = -5$ $\frac{17-7}{-5+3} = \frac{10}{-2} = -5$

2. H (12, -37) K (4, -3)

3. P (-11, -24) Q (21, 40)

4. R (55, -75) W (15, -40)

$\frac{-75+40}{55+15} = \frac{-35}{70} = -\frac{1}{2}$

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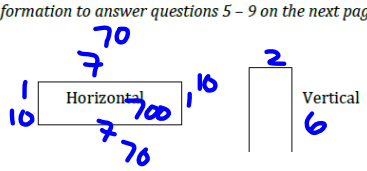
SET
Topic: Investigating perimeters and areas

Adam and his brother are responsible for feeding their horses. In the spring and summer the horses graze in an unfenced pasture. The brothers have erected a portable fence to corral the horses in a grazing area. Each day the horses eat all of the grass inside the fence. Then the boys move it to a new area where the grass is long and green. The porta-fence consists of 16 separate pieces of fencing each 10 feet long. The brothers have always arranged the fence in a long rectangle with one length of fence on each end and 7 pieces on each side making the grazing area 700 sq. ft. Adam has learned in his math class that a rectangle can have the same perimeter but different areas. He is beginning to wonder if he can make his daily job easier by rearranging the fence so that the horses have a bigger grazing area. He begins by making a table of values. He lists all of the possible areas of a rectangle with a perimeter of 160 ft. while keeping in mind that he is restricted by the lengths of his fencing units. He realizes that a rectangle that is oriented horizontally in the pasture will cover a different section of grass than one that is oriented vertically. So he is considering the two rectangles as different in his table. Use this information to answer questions 5 – 9 on the next page.



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5. Fill in Adam's table with all of the arrangements for the fence. (The first one is done for you.)

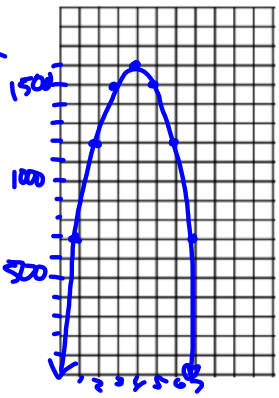
	Length in fencing" units	Width in "fencing" units	Length in ft.	Width in ft.	Perimeter (ft)	Area $(ft)^2$
	1 unit	7 units	10 ft	70 ft	160 ft	700 ft^2
a.	2 units	6	20	60	160 ft	1200
b.	3 units	5	30	50	160 ft	1500
c.	4 units	4	40	40	160 ft	1600
d.	5 units	3	50	30	160 ft	1500
e.	6 units	2	60	20	160 ft	1200
f.	7 units	1	70	10	160 ft	700

6. Discuss Adam's findings. Explain how you would rearrange the sections of the porta-fence so that Adam will be able to do less work.

40x40 = 1600 maximizes the area

7. Make a graph of Adam's investigation. Let length be the independent variable and area be the dependent variable. Label the scale.

x	Area
1	700
2	1200
3	1500
4	1600
5	1500
6	1200
7	700



8. What is the shape of your graph?

upside down U shape parabola

9. Explain what makes this function be a quadratic.

$\ell \cdot w$

Area $= x \cdot x = x^2$

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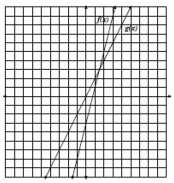
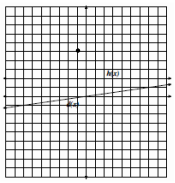
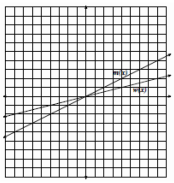
GO

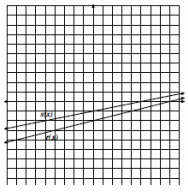
Topic: Comparing linear and exponential rates of change

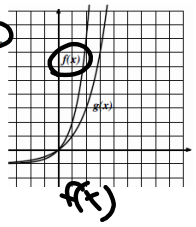
Indicate which function is changing faster.

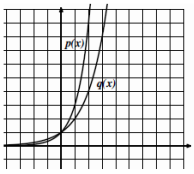
10. 

11. 

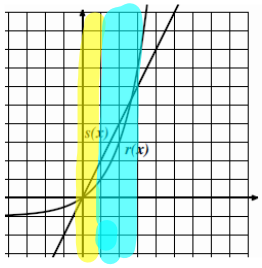
12. 

13. 

14. 

15. 

Aug 31-11:00 AM



16 a. Examine the graph at the left from 0 to 1.

Which graph do you think is growing faster?

s(x)

b. Now look at the graph from 2 to 3.

Which graph is growing faster in this interval?

r(x)

Aug 31-11:01 AM