

March 4, 2019, Monday

sub work

March 5, 2019, Tuesday

Determine if the sequence is geometric. If it is, find the common ratio.

1) 1) 4, 16, 64, 256... YES $r = \frac{16}{4} = 4$

2) 2, 5, 10, 17... NO!

3) -2, -6, -18, -54... YES $r = \frac{-6}{-2} = 3$

4) 3, 9, 27, 81... YES $r = \frac{9}{3} = 3$

5) -2, 4, -8, 16... YES $r = -2$

6) -1, -2, -4, -8... YES $r = 2$

7) Find the three terms in the sequence after the last one given.

8) Find the recursive formula.

9) Find the explicit formula.

Exponential Equation

...test

Feb 28-8:11 AM

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Algebra 1 - Day 4, 3/1/2018 Unit 4 Test Review

1) Write an explicit rule and find the 10th term: 256, 64, 16, 4, ...

2) Find the last three terms.

3) Given that a sequence is geometric, identify the characteristics.

4) Graph the function $f(x) = 27^{-x-3}$.

5) For each of the functions, identify the characteristics.

6) Describe the transformations made to $f(x) = 3^x$ to get $g(x)$.

Exponential Equation

$y = ab^{kx} \pm k$

Reflection: $-$
Steepness: 2
Shift: $+1$ left one

7) Write an equation for the given description.

Exponential Equation

$y = ab^{kx} \pm k$

8) Given the equation $y = 3(4)^{x-7} + 1$

a. Does the equation represent growth or decay?

b. What is the growth factor?

c. What is the rate of growth?

d. What is the initial value?

e. Evaluate for $x = 7$.

9) Write an explicit formula and describe the formula to model the number of dots per day.

10) Taylor is training for a marathon. He decides to begin by running 3 miles and increase by 1/5 miles each day. Write an equation to represent the number of miles he runs each day. How long will it take him to run 100 miles?

Exponential Equation

$y = ab^{kx} \pm k$

Guessing n's...

11) You bought a Boston Whaler in 2004 for \$2,500. The boat's value depreciates by 7% a year. How much is the boat worth now? How much is it worth in 2020?

Compound Interest Formula

$A = P(1 + \frac{r}{n})^{nt}$

12) The population of a large city increases by a rate of 3% a year. When the 2000 census was taken, the population was 1.2 million.

Write a model for this population growth.

What should the population be in 2019? What is the projected population in 2020?

13) Which function represents the sequence?

14) Which function shows the function $f(x) = 3^x$ being translated 5 units to the left?

15) The table represents an exponential function. Write the equation that represents the function.

16) True or False: An exponential function will always have an x-intercept.

17) True or False: An exponential function will always have a y-intercept.

18) Is the graph of the following function increasing or decreasing? $f(x) = 5^x$

19) The table below describes an exponential function.

a) Is the function exponential growth or exponential decay?

b) Write the equation of the function.

20) An item is purchased for \$4000 and it depreciates in value 10% per year. Write an equation to describe the value of the item in 7 years.

Compound Interest Formula

$A = P(1 + \frac{r}{n})^{nt}$

21) Given the function $y = 2(2)^{x-1} + 4$

a) Does the function represent growth or decay?

b) What is the equation of the asymptote?

c) Describe the transformations that occur.

22) Given the function $y = 5(3)^{-x}$

a) Does the function represent growth or decay?

b) What is the equation of the asymptote?

c) Describe the transformations that occur.

March 6, 2019, Wednesday

The function $f(x) = 2^x + 1$ is modeled on the graph below. Use the graph to answer questions #6-7.

6th & 11th term
The table shows a given sequence. If the pattern continues, find the 6th term of the sequence. NGSE9-12.F.BF.2

Term Number	1	2	3	4	5	6
Sequence	2	4	8	16	32	64

$r = \frac{4}{2} = 2$

7) What is the domain of the function? NGSE9-12.F.4

a) $(-\infty, \infty)$ \mathbb{R} $(-\infty, \infty) = \mathbb{R}$
 b) $(0, \infty)$
 c) $(1, \infty)$ ← Range
 d) $(-\infty, 1)$

8) Use the graph above to fill in the blank. NGSE9-12.F.4
 End behavior: As $x \rightarrow \infty$, $y \rightarrow$ ____ ..test

a) $-\infty$
 b) ∞
 c) 0
 d) 1

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You can skip any TWO of the multiple choice questions. Please write "SKIP" largely!

Mar 6-8:55 AM

Copy 3 of the problems, to turn in.

Answer the question, what is factoring?

<https://www.youtube.com/watch?v=VKAYqzRp4o>

Mar 6-8:26 AM

March 7, 2019, Thursday

1) Samir made a pattern shown below. What number belongs in the position indicated by the question mark? NGSE9-12.F.BF.2
 $9, 3, \frac{1}{3}, 7, \frac{1}{27}, \dots$

10) Which table best describes a function with exponential decay? NGSE9-12.F.4

a)

x	f(x)
1	81
2	27
3	9
4	3

b)

x	f(x)
1	80
2	76
3	72
4	68

c)

x	f(x)
1	80
2	76
3	72
4	68

d)

x	f(x)
1	2
2	4
3	8
4	16

21) Given the function $y = 2\left(\frac{1}{3}\right)^{x+1} - 5$.
 a) Does the function represent an exponential growth or exponential decay?
 b) What is the equation of the asymptote?
 $y =$ _____

Feb 28-8:13 AM

GSE Algebra I Unit 3A - Factoring Quadratics

Name: _____ Date: _____

GCF Factoring

Introduction to Factoring out GCF

"Factor" simply means to UNDISTRIBUTE.

Distributed Version	Factored Version
	$5x(x + 3)$
	$2x^2(x - 4)$
$2x^2 - 4x$	
$15x^2 - 5x + 30$	

More formal Definition:
 ● **Factoring:** Writing the polynomial as a product.

Steps to Factoring Out a GCF:

- Find the GCF of all its terms (number and/or variables). For variables ALL the terms must have the variable. Choose the greatest exponent!
- The GCF goes to the LEFT!
- Write the polynomial as a product by dividing the original terms of the polynomial by the GCF.
- The remaining factors in each term will form a polynomial. You'll always have the same number of terms you started with.

Factor using a GCF:

● $4x + 6y$ ● $6x^2 - 9x^2 + 12x$ ● $y^2 - y^2 + y^2$

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GSE Algebra I Unit 3A - Factoring Quadratics

PRACTICE: Factor each polynomial using a GCF.

- $10x + 45$
- $28x - 63$
- $18a + 42$
- $6x + 24$
- $18x^2 - 15x + 39$
- $27a^2 + 81$
- $7a^3 + 33a^2 - 42a^2$
- $15x^2 + 30x - 45x^2$
- $4x^2 + 16x - 44$
- $10.14x^2 + 7x - 42$

Feb 28-9:04 AM

Name _____ Date _____

-Factoring the difference of two squares Notes-

What is the difference of two squares?

- Must have _____ squares
- Must have _____ (difference)
- A _____ is a _____ square if the _____ is an _____ number.

$4x^2 - 81$ and $x^2 - 16$

Examples:

1. $x^2 - 16$	2. $x^2 - 100$
3. $4x^2 - 25$	4. $9 - y^2$
5. $2x^2 - 8$	

Extra Practice:

1) $9x^2 - 1$	2) $4n^2 - 49$
3) $36k^2 - 1$	4) $p^2 - 36$
5) $2x^2 - 18$	6) $196n^2 - 144$

Mar 1-8:44 AM

GSE Algebra I Name _____ Date _____

Difference of Two Perfect Squares ($a^2 - b^2$)

1. $n^2 - 25$	2. $4x^2 - 121y^2$
3. $196r^2 - 1$	4. $100x^2 - 49$
5. $2x^2 - 162x$	6. $16x^2 - 36$
7. $8x^2 - 18$	8. $15x^2 - 49y^2$
9. $68x^2 - 17$	10. $25x^2 - 49y^2$
11. $50x^4 - 98x^2y^2$	12. $45x^2 - 20y^2$

Mar 1-8:46 AM

March 8, 2019, Friday

Factor the common factor out of each expression, if possible.

1) $-5y^3 - 10y^2 - 20$ 2) $9x^3 + 9x + 12$

3) $4x^3 + 3x^2 + 5$

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Intro to Factoring Quadratics Name _____

- Find two numbers that sum to 8 and have a product of 12 _____
- Find two numbers that sum to 5 and have a product of 6 _____
- Find two numbers that sum to 5 and have a product of -14 _____
- Find two numbers that sum to -8 and have a product of 12 _____
- Find two numbers that sum to 16 and have a product of 15 _____
- Find two numbers that sum to -4 and have a product of -21 _____
- Find two numbers that sum to 1 and have a product of -56 _____
- Find two numbers that sum to -14 and have a product of 40 _____
- Find two numbers that sum to 0 and have a product of -25 _____
- Find two numbers that sum to 8 and have a product of 16 _____

11. Multiply the following:

a. $(x + 6)(x + 3)$ b. $(x + 7)(x - 2)$

$x^2 + \underline{\quad}x + \underline{\quad}$

Notice: What is the sum of the constants in each binomial above?

$x^2 + \underline{\quad}x + \underline{\quad}$

Notice: What is the product of the constants in each binomial above?

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Unit 3a Day 2 Notes - Factoring Trinomials when $a=1$

MCC9-12.A.1.5E.3a can factor a quadratic expression to reveal the zeroes of the function it defines.

Now let's factor binomials (3 terms)

- Remember, we undo multiplying!

Example 1: $x^2 + 5x + 6$

1. Is there a GCF? Yes or No _____

To factor a binomial, it breaks down into a product of binomials (2 terms each)

What are the factors of 6 (what pairs multiply to 6)? _____ Which pair adds to be 5? _____

Answer: $(x + \underline{\quad})(x + \underline{\quad})$

Now you try!

1. $x^2 + 7x + 12$	2. $x^2 + 12x + 20$
3. $x^2 + 8x + 12$	4. $x^2 + 6x + 9$
5. $x^2 - x - 12$	6. $x^2 - 2x - 24$
7. $x^2 - 6x + 8$	8. $x^2 - 11x + 24$

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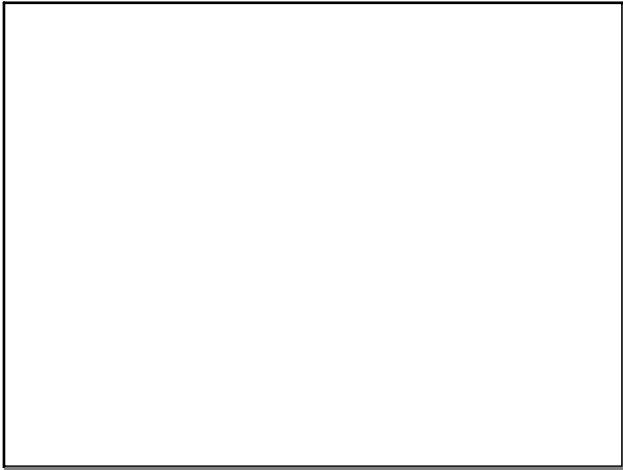
GSE Algebra I Unit 3A - Factoring Quadratics Name _____ Date _____

Factoring Trinomials ($ax^2 + bx + c$)

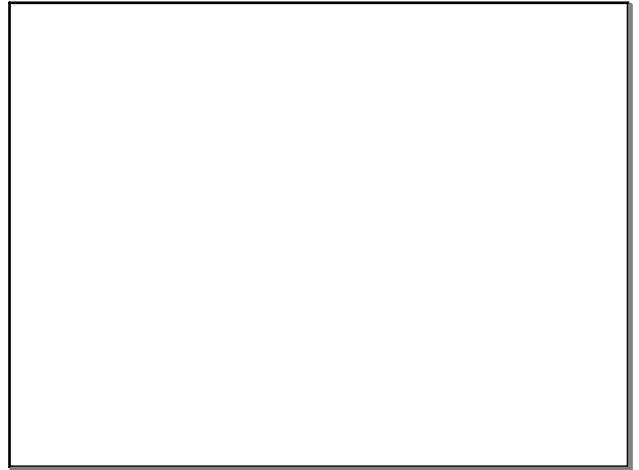
Factor each binomial completely. *Hint - #8-10 take out a GCF 1st!

1. $x^2 - 5x - 14$	2. $x^2 - 2x - 24$
3. $x^2 + x - 20$	4. $x^2 - 5x - 66$
5. $x^2 - 10x - 24$	6. $x^2 + 7x - 18$
7. $x^2 - 6x - 16$	8. $2x^2 + 12x^2 + 18x$
9. $3x^2 + 12x - 63$	10. $2x^3 - 6x^2 - 20x$

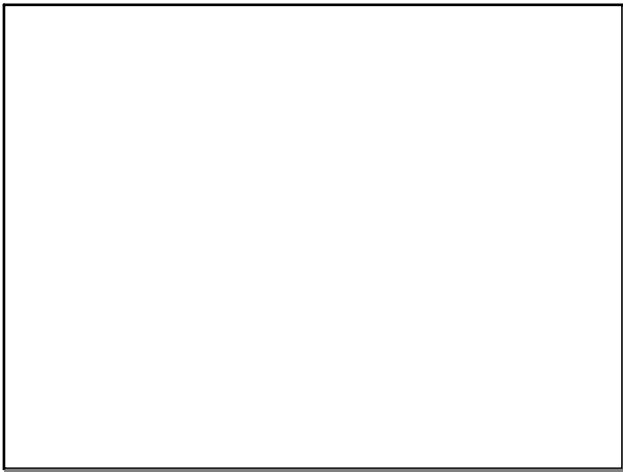
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Name _____

GSE Algebra 1

Compare/Contrast: Linear, Quadratic, and Exponential Functions Notes

Attribute	Linear Functions	Quadratic Functions	Exponential Functions
Rate of change			
Domain & Range			
Intercepts			
Asymptotes			
End Behavior			

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Examples

Attribute	Linear Functions	Quadratic Functions	Exponential Functions
Rate of change			
Domain & Range			
Intercepts			
Asymptotes			
End Behavior			

Functions to Graph and Discuss:

$f(x) = 2x + 3$

$f(x) = 2x^2 + 3$

$f(x) = 2^x + 3$

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4. The graph represents a quadratic function.

a. Extrema: _____ b. Axis of Sym: _____

c. Zero: _____ d. y-intercept: _____

e. Domain: _____ f. Range: _____

g. Increasing: _____ h. Decreasing: _____

5. The quadratic function $f(x)$ has these characteristics:

- The vertex is located at $(6, -2)$.
- The range is $-2 < f(x) < \infty$.

Which graph could be $f(x)$?

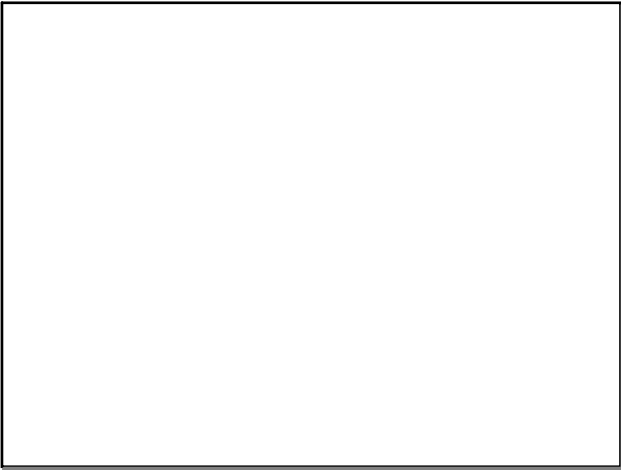
a) b)

c) d)

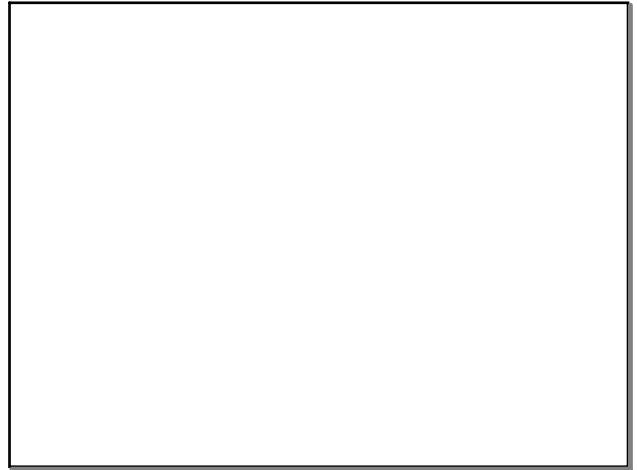
6. Use the information for a given quadratic function to sketch a picture of the function.

Domain: $- < x < \infty$
 Range: $y \geq -2$
 Increasing: $-1 < x < 1$
 Decreasing: $- < x < -1$
 There is no stretch or shrink ($a = 1$)

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