

HSD SUMMATIVE ASSESSMENT

COURSE: Algebra 1 (8th)

UNIT 2: Linear and Exponential Relationships

ANSWER KEY
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Student Name: _____

Class Period: _____

Date: _____

Question 1 Standard: A1.REI.B.3 Blooms: Apply DOK: 2 Total Points: 6

Solve the System of Equation described below:

Negative three times one number plus five times another number is -11. Three times the first number plus seven times the second number is -1. Find the numbers.

Equation 1 (1 point): $-3x + 5y = -11$
 Equation 2 (1 point): $3x + 7y = -1$
 Show ALL work here (2 points):

$$\begin{array}{r} -3x + 5y = -11 \\ 3x + 7y = -1 \\ \hline 12y = -12 \\ y = -1 \end{array}$$

$$\begin{array}{r} 3x + 7(-1) = -1 \\ 3x - 7 = -1 \\ 3x = 6 \\ x = 2 \end{array}$$

Answer (2 points): numbers = $\{-1, 2\}$

Question 2 Standard: A1.REI.B.5 Blooms: Apply DOK: 1 Total Points: 4

Solve the System of Equation described below:

$$\begin{cases} 4x - 4y = 8 \\ -8x + y = 19 \end{cases}$$

Show ALL work here (2 points):

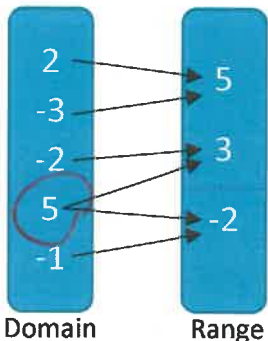
$$\begin{array}{r} 4x - 4y = 8 \xrightarrow{\cdot 2} 8x - 8y = 16 \\ -8x + y = 19 \\ \hline -7y = 35 \\ y = -5 \end{array}$$

$$\begin{array}{r} -8x + (-5) = 19 \\ -8x - 5 = 19 \\ -8x = 24 \\ x = -3 \end{array}$$

Answer (2 points): $(x, y) = \{-3, -5\}$

Question 3 Standard: A1.REI.C.6 Blooms: Understand DOK: 2 Total Points: 2

Is the following diagram representative of a "function" or a "relation"? Justify your answer below:



Circle your answer (1 point): ~~Function~~ Relation
 Justify your conclusion FULLY (1 point):
 5 (domain) maps to TWO outputs in the range ... THEREFORE NOT A FUNCTION

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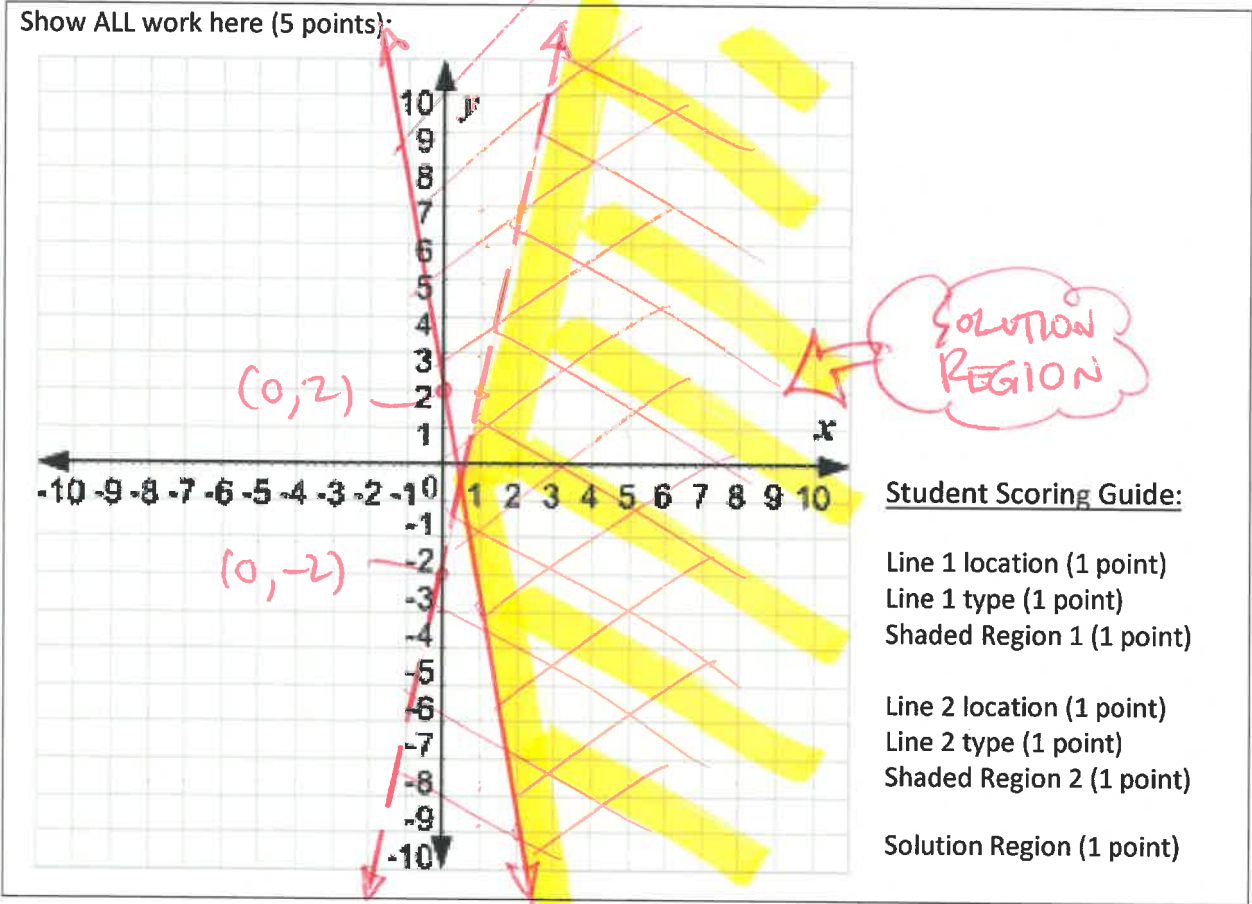
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Question 4 Standard: A1.REI.C.7 Blooms: Apply DOK: 2 Total Points: 7

Use the GRAPHING method to solve the System of Inequalities described below:

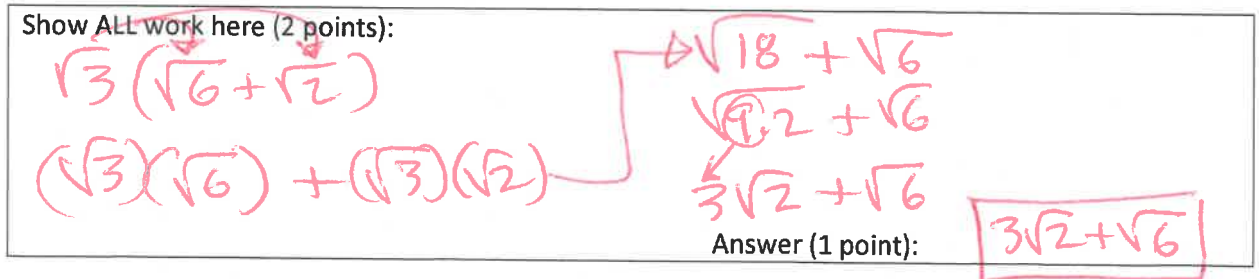
$$\begin{cases} y < 5x - 2 & (0, -2) \\ y \geq -6x + 2 & (0, 2) \end{cases}$$



Question 5 Standard: A1.NQ.A.2 Blooms: Understand DOK: 1 Total Points: 3

Perform the indicated operations on the radical expression to represent it in its simplest form below:

$$\sqrt{3}(\sqrt{6} + \sqrt{2})$$



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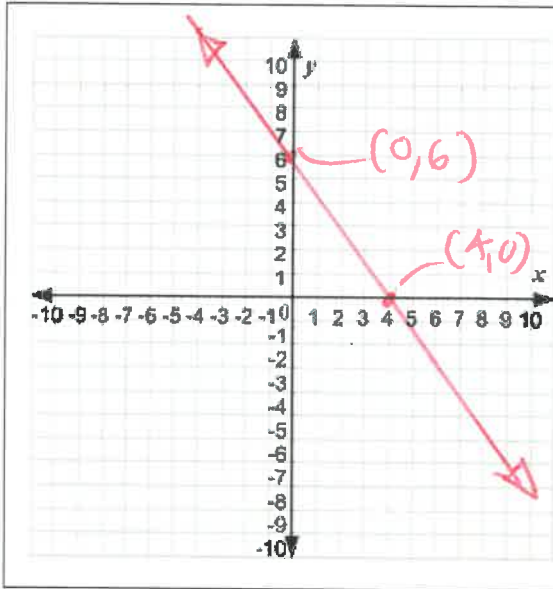
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Question 6 Standard: A1.REI.C.6 Blooms: Apply DOK: 1 Total Points: 7

Graph the equation given below:

$$3x + 2y = 12$$



Show ALL work here (2 points):

$$3x + 2y = 12$$

$\textcircled{\text{at } x=0:}$
 $2y = 12$
 $y = 6$

$\textcircled{\text{at } y=0:}$
 $3x = 12$
 $x = 4$

Student Scoring Guide:

Point 1 location (1 point)
 Point 1 Labeled (1 point)

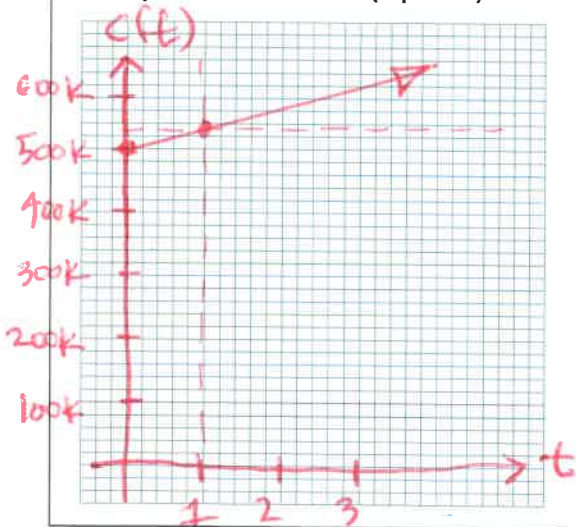
Point 2 location (1 point)
 Point 2 Labeled (1 point)

Line location (1 point)

Question 7 Standard: A1.LQE.A.3 Blooms: Apply DOK: 1 Total Points: 5

A music club began with an initial subscription list of 500,000 members. Since then, the subscription list has increased an average of 33,338 members per year. Write a function which describes the subscription c after t years and graph that function below:

Write your function here (2 points):



$$c(t) = mt + b$$

$$c(t) = 33,338t + 500,000$$

Student Scoring Guide:

y intercept location (1 point)
 Plotted Slope (1 point)
 Line drawn (1 point)
 Axis drawn (1 point)
 Axis labels/scale (1 point)

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Question 11 Standard: A1.IF.C.7 Blooms: Analyze DOK: 2 Total Points: 6

Graph the function $y = 2x^2 + 2$ and answer the questions about key features in the space given below:

Show ALL work here (2 points):

x	$2x^2 + 2$	y
-2	$2(-2)^2 + 2$	10
-1	$2(-1)^2 + 2$	4
0	$2(0)^2 + 2$	2
1	$2(1)^2 + 2$	4
2	$2(2)^2 + 2$	10

GRAPH DOES NOT CROSS X-Y AXIS!
 NO REAL ZEROS!

Student Scoring Guide (1 point each):

Write the VERTEX coordinate: $(0, 2)$

Write the AXIS of SYMMETERY: $x = 0$

Write the y-INTYERCEPT: $(0, 2)$

Are there any Real Zeros? Circle one: Yes No

Question 12 Standard: A1.IF.A.2 Blooms: Apply DOK: 2 Total Points: 8

Given the two functions represented below, answer the question prompts in the space given below:

Function A:

x	$f(x)$
-1	1
0	0
1	1
2	4
3	9

+1
+1
+3
+5

Function B:

QUADRATIC

$\{(0, 3), (2, 1), (4, -1), (6, -3), (-2, 5)\}$

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

-2
-2
-2
-2

Analysis (1 point each):	Rationale (1 point each):
a) Are Functions A and B the SAME shape? Circle one: Yes <input checked="" type="checkbox"/> No	a) FUNCTION "A" IS NOT LINEAR & FUNCTION "B" IS LINEAR.
b) Function A is... Circle one: Linear <input checked="" type="checkbox"/> Quadratic	b) I SEE THE COMMON DIFFERENCE REQUIRED 2 ITERATIONS \therefore QUAD.
c) Function B is... Circle one: <input checked="" type="checkbox"/> Linear Quadratic	c) I SEE A COMMON DIFF ON BOTH SIDES (x & y): \therefore LINEAR
d) Which function has a "vertex"? Circle one: <input checked="" type="checkbox"/> A B	d) LINEAR $f(x)$ HAS NO CURVE \therefore QUADRATIC FUNCTION HAS VERTEX

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Question 13 Standard: A1.BF.A.1 Blooms: Analyze DOK: 2 Total Points: 2

Explain the difference in the graphical shapes between $f(x) = x^2 - 4x$, and $g(x) = x^2 - 4x + 3$ below:

Answer and justify your conclusions FULLY here (2 points):

SINCE THE BOTH HAVE IN COMMON " $x^2 - 4x$ " THEY ARE BOTH QUADRATICS, BUT $f(x)$ HAS Δ "C" OF ZERO WHILE $g(x)$ HAS Δ "C" OF 3. THE SHAPES ARE THE SAME BUT $g(x)$ IS 3 UNITS UP THE GRAPH FROM $f(x)$

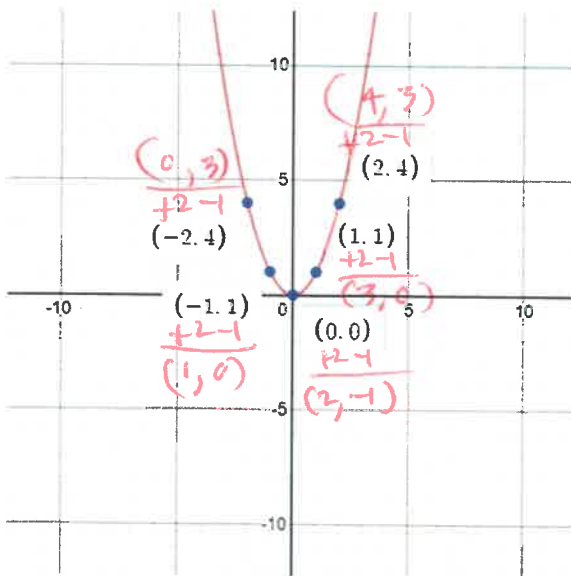
Question 14 Standard: A1.BF.A.1 Blooms: Understand DOK: 1 Total Points: 1

When a function "slides" on the coordinate axis, but does NOT change shape or orientation, this is referred to as a:

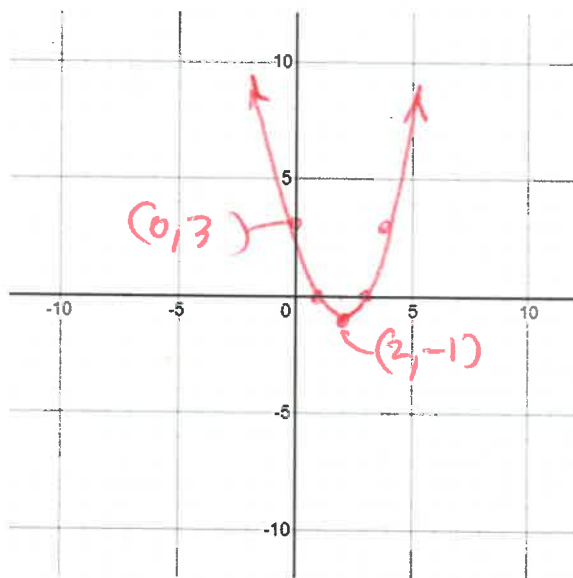
- a) Rotation
- b) Contraction
- c) Expansion
- d) Translation

Question 15 Standard: A1. BF.A.1 Blooms: Analyze DOK: 2 Total Points: 5

Given the function $f(x)$ below... graph the transformation $g(x)$ as instructed:



$f(x) = x^2$



$g(x) = x^2$ where: $(x + 2, y - 1)$

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