

# HSD SUMMATIVE ASSESSMENT

**COURSE:** Algebra 1 (8<sup>th</sup>)  
**UNIT 4:** Expressions and Equations

Points Scored: \_\_\_\_\_ = %  
 Points Possible: 49

ANSWER KEY  
 PG 1 OF 4

Student Name: \_\_\_\_\_

Class Period: \_\_\_\_\_

Date: \_\_\_\_\_

**Question 1**                      Standard: A1.APR.A.1    Blooms: Apply    DOK: 1                      Total Points: 5

Perform the following operation on the polynomials as instructed below:

$$(4x^3 - 3x^2 + 5x - 7) - (-2x^3 + 5x^2 - 2)$$

Show ALL work necessary (4 points):

$$\begin{array}{r} 4x^3 - 3x^2 + 5x - 7 \\ + 2x^3 - 5x^2 + 0x + 2 \\ \hline 6x^3 - 8x^2 + 5x - 5 \end{array}$$

STUDENTS SHOULD UNDERSTAND ALIGNMENT OF "LIKE TERMS" & THE NEED FOR A PLACEHOLDER WHEN USING COLUMN ADDITION

Answer (1 point):  $6x^3 - 8x^2 + 5x - 5$

**Question 2**                      Standard: A1.APR.A.1    Blooms: Apply    DOK: 1                      Total Points: 5

Perform the following operation on the polynomials as instructed below:

$$(5x^3 + 2x^2 + 3x - 9) + (-4x^3 - 3x^2 + 5)$$

Show ALL work necessary (4 points):

$$\begin{array}{r} 5x^3 + 2x^2 + 3x - 9 \\ + (-4x^3 - 3x^2 + 0x + 5) \\ \hline x^3 - x^2 + 3x - 4 \end{array}$$

Answer (1 point):  $x^3 - x^2 + 3x - 4$

**Question 3**                      Standard: A1.SSE.A.2    Blooms: Apply    DOK: 1                      Total Points: 5

Perform the following operation on the polynomials as instructed below:

$$(2x^3 + 3x^2 + 4x - 5)(-4x^2 - 2x + 7)$$

Show ALL work necessary (4 points):

①	$-8x^5$	$-12x^4$	$-16x^3$	$+20x^2$
②		$-4x^4$	$-6x^3$	$-8x^2$
③			$+10x$	$-35$
$14x^3 + 21x^2 + 28x - 35$				

Answer (1 point):  $-8x^5 - 16x^4 - 8x^3 + 33x^2 + 38x - 35$

Total Points for this Page: \_\_\_\_\_

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Student Name: \_\_\_\_\_

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**Question 4**                      Standard: A1.APR.A.1    Blooms: Analyze    DOK: 2    Total Points: 3

Perform the necessary operations to convert the form of the expression below to an equivalent expression from the list shown below... select the appropriate choice by circling:

$$(a^2y)^{1/2} (b^6c^4)^{1/3}$$

a)  $ab^2c$

c)  $ab^2c\sqrt{y}\sqrt[3]{c}$

b)  $ab^3c\sqrt{cy}$

d)  $ab^3c^2$

Show ALL work necessary (2 points):

$(\sqrt{a^2y}) (\sqrt[3]{b^6c^4})$   
 $(a\sqrt{y}) (b^2c\sqrt[3]{c})$

$ab^2c\sqrt{y}\sqrt[3]{c}$

Answer (1 point):  $ab^2c\sqrt{y}\sqrt[3]{c}$

**Question 5**                      Standard: A1.APR.A.2    Blooms: Apply    DOK: 1    Total Points: 5

Perform the following operation on the polynomials as instructed below:

$$(x^3 + x^2 - 19x + 21) \div (x - 3)$$

Show ALL work necessary (4 points):

$x-3 \overline{) x^3 + x^2 - 19x + 21}$   
 $\underline{-(x^3 + 3x^2)}$   
 $4x^2 - 19x$   
 $\underline{-(4x^2 + 12x)}$   
 $-7x + 21$   
 $\underline{-(-7x + 21)}$   
 $0$

Answer (1 point):  $x^2 + 4x - 7$

Total Points for this Page: \_\_\_\_\_

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**Question 6**                      Standard: A1.APR.A.2    Blooms: Apply    DOK: 2                      Total Points: 5

Perform the necessary operation to simplify the rational expression shown below:

$$\frac{(x^2 + 2x - 63)}{(x - 7)}$$

Show ALL work necessary (4 points):

$$x^2 + 2x - 63 = (x - 7)(x + 9) \therefore \frac{\cancel{(x - 7)}(x + 9)}{\cancel{(x - 7)}} = x + 9$$

Answer (1 point):

$$\boxed{x + 9}$$

**Question 7**                      Standard: A1.CED.A.4    Blooms: Analyze    DOK: 2                      Total Points: 5

Ohm's Law is the equation  $V = (I)(R)$ , where  $v$  = voltage,  $I$  = current (Amps), and  $R$  = resistance... solve this equation for "current" in the space provided below:

Show ALL work necessary (2 points):

$$\frac{V}{R} = \frac{(I)(R)}{R} \therefore \frac{V}{R} = I$$

Answer (1 point):

$$\boxed{\frac{V}{R} = I}$$

**Question 8**                      Standard: A1.REI.B.4    Blooms: Analyze    DOK: 2                      Total Points: 8

Graph and label the following functions on the SAME axis coordinate below:

$$\begin{cases} y = 2x + 1 \\ y = -x^2 + 4x + 1 \end{cases} \rightarrow \frac{-b}{2a} = \frac{-4}{2(-1)} = \frac{-4}{-2} = 2$$

Show ALL work necessary (2 points):

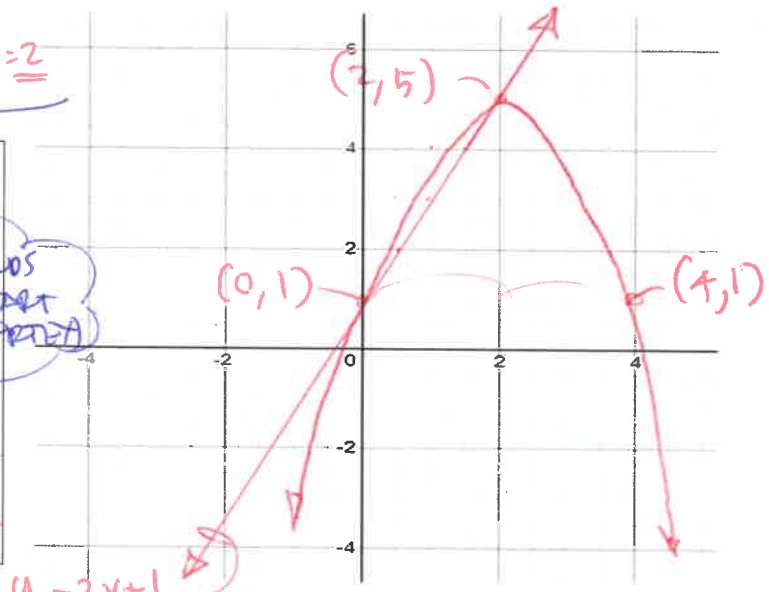
$$f(2) = (2)^2 + 4(2) + 1 = 4 + 8 + 1 = 13$$

$$f(0) = -(0)^2 + 4(0) + 1 = 1$$

$$f(4) = -(4)^2 + 4(4) + 1 = -16 + 16 + 1 = 1$$

THIS YIELDS GREAT START POINT (VERTIX)

SYMMETRY INFORMS MY OTHER INPUT CHOICES



Total Points for this Page: \_\_\_\_\_

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**Question 9**      Standard: A1.CED.A.4    Blooms: Analyze    DOK: 2    Total Points: 4

Solve the following system of equations algebraically to find the solution points below:

$$\begin{cases} y = 2x + 1 \\ y = -x^2 + 4x + 1 \end{cases}$$

THESE LEAD THEMSELVES TO SUBSTITUTION BUT ANY METHOD IS ACCEPTABLE IF APPROPRIATE

Show ALL work necessary (2 points):

$$\begin{aligned} 2x + 1 &= -x^2 + 4x + 1 \\ -x^2 + 2x &= 0 \\ \therefore x(2 - x) &= 0 \\ \begin{matrix} x = 0 & 2 - x = 0 \\ \underline{\underline{0}} & \underline{\underline{x = 2}} \end{matrix} \end{aligned}$$

$$\begin{aligned} \text{or } y &= 2(0) + 1 = \underline{\underline{1}} \\ \text{or } y &= 2(2) + 1 = \underline{\underline{5}} \end{aligned}$$

Answer (2 points): ( 0 , 1 ) and ( 2 , 5 )

**Question 10**      Standard: 8.EE.C.2    Blooms: Analyze    DOK: 2    Total Points: 4

Solve the following system of equations by your choice of methods to find the solution points below:

$$\begin{cases} y = \frac{1}{3}x + 3 \\ x - 3y = -9 \end{cases}$$

Show ALL work necessary (2 points):

$$\begin{aligned} x - 3\left(\frac{1}{3}x + 3\right) &= -9 \\ x - (3)\left(\frac{1}{3}x\right) - 3(3) &= -9 \\ x - x - 9 &= -9 \\ \underline{\underline{0}} &= \underline{\underline{0}} \end{aligned}$$

TEACHER NOTE:

IF WE REARRANGE EQUATION 2 ... THE OUTCOME BECOMES MORE OBVIOUS ~

$$\begin{aligned} x - 3y &= -9 \\ -3y &= -x - 9 \\ \frac{-3y}{-3} &= \frac{-x - 9}{-3} \\ y &= \frac{1}{3}x + 3 \end{aligned}$$

IDENTITY STATEMENT

INFINITE SOLUTIONS (COLINEAR)

Answer (1 points):