CBGS Sophomore Math Prep Summer Worksheet 2014

Name: _____

Directions: Answer all questions. Show detailed work in the space provided. This assignment will be the due the first day of Math Prep/New Student Orientation

1. Graph the set of numbers given on the number line below: -2, 0.2, $-\pi$, $-\sqrt{6}$, $\frac{6}{5}$



- (2-5) Identify the property shown:
- 2. $4(5+1) = 4 \cdot 5 + 4 \cdot 1$
- 3. 8 + 8 = 0
- 4. (8+6)+4=8+(6+4)
- 5. $9 \cdot (-2) = (-2) \cdot 9$
- (6-8) Evaluate each of the expressions given below:
- 6. $^{-3}-6 \div 2-12$

7. $^{-3}+5\cdot 4^{2}$

8. $3ab^2 + 5a^2b - 1$, when a = 2 and b = -2

- (9-12) Simplify the Expression
- 9. 7y 2x + 5x 3y + 2x
- 10. 4(3-x)+5(x-6)
- 11. $6x^2 3x + 5x^2 + 2x$

12.
$$2(x^2 + x) - 3(x^2 - 4x)$$

- (13-16) Solve each of the equations.
- 13. -5x+3=18

$$14. \qquad \frac{2}{3}n-5=1$$

15. 2-3a = 4+a

16. -4x - 4 = 3(2 - x)

(17-18) Solve each equation below for y.

17. 5x - 6y + 12 = 0

 $18. \qquad x - 2xy = 1$

- (19-20) Solve the formulas below for the indicated variable.
- 19. Solve for l: P = 2l + 2w

20. Solve for
$$C: F = \frac{9}{5}C + 32$$

- 21. How long will it take to drive 325 miles at 55 miles per hour? (Write your answer in hours and minutes.)
- 22. While on vacation, you a take taxi from the airport to your hotel for \$21.85. The taxi costs \$2.95 plus \$1.35 per mile. How far is it from the airport to the hotel?

- 23. Calculate slope of the straight line that passes between the points (-2,5) and (3,-4).
- 24. Graph the linear equation: 3x 2y = 8.



25. Write the slope-intercept form of the line graphed below:



26. Write the slope-intercept form of the linear equation that passes between the points (-4, -4) and (-1, 2).

- 27. Write the equation of the line that is perpendicular to y = -4 and passes through the point (-5,1).
- (28-31) Solve the inequality. Then graph your solutions.







 $30. \qquad -3 \le 2y + 1 \le 5$



31. 3a+1 < -2 or 3a+1 > 7



- (32-34) Solve the equation or inequality.
- 32. |2x-1| = 15

33. |2x-5| < 9

 $34. \qquad |3x+4| \ge 2$

(35-38) Simplify the expression.

$$35. \qquad \left(\frac{2}{3}\right)^2 \cdot \left(6xy^{-1}\right)^3$$

$$36. \qquad x^4 (x^{-5} x^3)^2$$

37.
$$\frac{-63xy^9}{18x^{-2}y^3}$$

$$38. \qquad \frac{5x^2}{y^{-2}} \cdot \frac{1}{25x^2y}$$

39. Completely expand the expression: 2x(3x-1)(x+4).

40. Completely expand the expression: $(2x-5)^3$.

41. Completely factor the expression: $3x^2 - 48$.

42. Solve the equation by factoring: $4x^2 + 8x + 4 = 0$.

43. Use the quadratic formula to solve the equation: $2x^2 + x + 9 = 0$.

44. Simplify the expression: i^{316}

45. Expand the product: (3i+5)(3i-5).

46. Expand the product: $(2i-7)^2$.

47. Write the equations of any vertical and horizontal asymptotes that would appear in the graph of the rational function given below:

$$f(x) = \frac{4x^2 + 1}{x^2 - 1}$$

Equation(s) of any vertical asymptote(s):

Equation(s) of any horizontal asymptote(s):

48. Answer the following regarding the polynomial equation given below:

$$x(x-2)^{2}(3x+2) = 0$$

a. What is the degree of the polynomial?

b. What are the roots of the polynomial function?

c. Which of the roots listed above, if any, have a multiplicity greater than 1?

d. What is the maximum number of turns the graph of the related polynomial function could have?





- 50. Re-write the exponential equation as a logarithmic equation: $4^{x-5} = 9$.
- 51. Use properties of logarithms to completely expand the expression: $\log_4\left(\frac{x^3}{x-2}\right)$.

52. Solve the exponential equation given below; leave your answer rounded to 3 decimal places.

$$5^{x+1} - 16 = 382$$

53. Determine the inverse of the function given below:

$$f(x) = 2\log_3(x-7)$$