Name

This packet contains topics you have learned in previous courses that are most important to know for this class. Please read the directions and **show your work** for each problem. Then write your answers on the answer sheet.

- 1. Which number is least? A  $\frac{3}{5}$  B  $\frac{5}{16}$  C  $\frac{19}{49}$  D  $\frac{5}{9}$
- 2. Which number is not a solution of  $2x 3 \ge 5$ ? A 7 B 2 C 4 D 6
- 3. Which represents a rational number? $F\sqrt{17}$  $G\sqrt{36}$  $H\sqrt{50}$  $J\sqrt{101}$

4. If 
$$\frac{a}{b} = 10$$
 and  $ac - 6 = 4$ , then  $bc = F - 1$  G 1 H 10 J 15

- 5. Solve  $-3.5 \ x \le 70$ . F  $x \ge -20$  G  $x \ge 20$  H  $x \le -20$  J  $x \le 20$
- 6. Solve y = 3x + 5 for x. A  $x = \frac{5}{3}y$  B  $x = \frac{y-5}{3}$  C  $x = \frac{3}{5}y$  D  $x = \frac{5-y}{3}$

Solve each equation.

7. |2y - 1| + 4 = 13

8. -5(m-5) = 3(10-2m) + m

Solve each inequality. Graph the solution set.

9.  $4(t-5) \ge 5-t$ 

10.  $|x + 3| \ge 4$ 

11. If the perimeter of a rectangle is 96 inches and the length is 4 inches longer than the width, what is the area?

A 22 in<sup>2</sup> B 26 in<sup>2</sup> C 230 in<sup>2</sup> D 572 in<sup>2</sup>

- 12. If x y = 6 and 3x 10 = 2y, what is the value of y? F -8 G -4 H 4 J 8
- 13. Which is equal to  $x^3 8$ ?A  $(x-2) (x^2 + 4x + 4)$ B  $(x-2) (x^2 + 2x + 4)$ C  $(x+2) (x^2 4x + 4)$ D  $(x+2) (x^2 2x + 4)$
- 14. Evaluate the expression  $2x^2 3x$  if x = -7.
- 15. Find the *x*-intercept and the *y*-intercept of the graph of 3x 4y = 8.
- 16. Write an equation in slope-intercept form for the line that has a slope of -4 and passes through (3, -5).
- 17. Identify the domain of the piecewise function  $h(x) = \begin{cases} x + 5 & \text{if } x \le -2 \\ -4x & \text{if } x > -2 \end{cases}.$

Perform the indicated matrix operations. If the matrix does not exist, write impossible.

 $18. \begin{bmatrix} 3 & 1 \\ -2 & 17 \end{bmatrix} - \begin{bmatrix} 1 & 9 & -5 \\ -7 & 6 & 4 \end{bmatrix}$   $19. -4 \begin{bmatrix} 3 & 0 & 11 \\ -9 & 2 & 6 \\ 4 & -3 & -5 \end{bmatrix}$ 

20. Evaluate 
$$\begin{vmatrix} -4 & 2 & -1 \\ 1 & -1 & 2 \\ -3 & 0 & 5 \end{vmatrix}$$
 using diagonals.

- 21. The sum of two numbers is 37. The second number is 3 more than the first number. Write a system of equations to represent the given information. Solve the system.
- 22. Solve  $4x^2 4x = 24$  by factoring.
- 23. Find the value of the discriminant for  $7x^2 + 5x + 1 = 0$ . Then describe the number and type of roots for the equation.
- 24. Use  $y = x^2 7x + 5$  for parts a c. a. Write the equation in vertex form.
  - b. Identify the vertex.
  - c. Identify the axis of symmetry.
- 25. Use long division to find  $(6x^3 + x^2 + x) \div (2x + 1)$ .
- 26. Consider the polynomial function,  $f(x) = 2x^4 x^3 + 6x^2 7x 5$ 
  - a. What is the degree of the function?
  - b. What is the leading coefficient of the function?
  - c. Evaluate f(-2) and f(3a).

27. Simplify 
$$\sqrt{49x^2y^4}$$
.  
A 7|x| y<sup>2</sup> B 24.5|x| y<sup>2</sup> C ±7xy<sup>2</sup> D |xy|

28. Write the radical 
$$\sqrt[4]{25z^6}$$
 using rational exponents.  
F 2.5  $z^{\frac{2}{3}}$  G  $5^{\frac{1}{2}} z^{\frac{3}{2}}$  H  $5^{\frac{1}{2}} z^{\frac{2}{3}}$  J  $5^{\frac{1}{4}} z^{\frac{3}{2}}$ 

- 29. Write a quadratic equation with 3 and -2 as its roots. Write the equation in the form  $ax^2 + bx + c = 0$ , where *a*, *b*, and *c* are integers.
- 30. Simplify  $(5 + 2\sqrt{3}) (2 4\sqrt{3})$ . F 10 - 8  $\sqrt{3}$  G -62 - 16 $\sqrt{3}$  H -14 J -14 - 16 $\sqrt{3}$
- 31. Solve  $\sqrt[3]{y-3} 6 = 4$ . A 1003 B 103 C -5 D 11
- 32. Simplify the expression  $\left(w^{\frac{1}{3}}\right)^{\frac{2}{5}}$
- 33. Suppose *y* varies jointly as *x* and *z*. Find *y* when x = 16 and z = 5, if y = 9 when x = 3 and z = 12.

34. If 
$$g(x) = 4x$$
 and  $h(x) = 3x - 5$ , find  $[h \circ g](x)$ .  
F  $12x^2 - 20x$  G  $7x - 5$  H  $12x - 5$  J  $12x^2 - 5$ 

Nam	ne		
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21.			
22.			
23.			
24.	ab.	C	
25			
26.	ab	C	

