

Summer Packet for Students entering Honors Geometry

Name _____

This packet contains topics that 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. Due by Monday, August 28, 2017.

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 $2x - 3 \geq 5$?

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 $-3.5x \leq 70$.

F $x \geq -20$

G $x \geq 20$

H $x \leq -20$

J $x \leq 20$

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. $4(t - 5) \geq 5 - t$

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

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^2

B 26 in^2

C 230 in^2

D 572 in^2

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 $(x - 2)(x^2 + 4x + 4)$

C $(x + 2)(x^2 - 4x + 4)$

B $(x - 2)(x^2 + 2x + 4)$

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 and range of the piecewise function

$$h(x) = \begin{cases} x + 5 & \text{if } x \leq -2 \\ -4x & \text{if } x > -2 \end{cases}$$

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.
- Write the equation in vertex form.
 - Identify the vertex.
 - Identify the axis of symmetry.

25. Use long division to find $(6x^3 + x^2 + x) \div (2x + 1)$.

26. Consider the polynomial function, $f(x) = 2x^4 - x^3 + 6x^2 - 7x - 5$
- What is the degree of the function?
 - What is the leading coefficient of the function?
 - Evaluate $f(-2)$ and $f(3a)$.

27. Simplify $\sqrt{49x^2y^4}$.

A $7|x|y^2$

B $24.5|x|y^2$

C $\pm 7xy^2$

D $|xy|$

28. Write the radical $\sqrt[4]{25z^6}$ using rational exponents.

F $2.5z^{\frac{2}{3}}$

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. Solve the inequality $-x^2 + 25 < 0$.

A $\{x \mid x < -5 \text{ or } x > 5\}$

C $\{x \mid -5 < x < 5\}$

B $\{x \mid x = -5 \text{ or } x = 5\}$

D \emptyset

30. 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.

31. Simplify $(5 + 2\sqrt{3})(2 - 4\sqrt{3})$.

F $10 - 8\sqrt{3}$

G $-62 - 16\sqrt{3}$

H -14

J $-14 - 16\sqrt{3}$

32. Solve $\sqrt[3]{y - 3} - 6 = 4$.

A 1003

B 103

C -5

D 11

33. Simplify the expression $(w^{\frac{1}{3}})^{\frac{2}{5}}$

34. Solve $x^2 + 2x + 2 = 0$ by completing the square

35. Use synthetic substitution to find $f(3)$ for $f(x) = 3x^3 - 7x^2 + 5x - 10$.

36. List all of the possible rational zeros of $2x^4 - 5x^3 + 3x^2 - 12x - 6$.

37. Simplify $\frac{\frac{9y^2 - 36}{5y^2 + 10y}}{\frac{6y - 12}{10y^2 + 20y}}$.

38. Suppose y varies jointly as x and z . Find y when $x = 16$ and $z = 5$, if $y = 9$ when $x = 3$ and $z = 12$.

39. 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 $12x^2 - 5$

40. What is the midpoint of the line segment with end points at $(-10, 8)$ and $(2, -3)$?

A $(-6, \frac{11}{2})$

B $(-4, \frac{5}{2})$

C $(-8, 5)$

D $(-12, 11)$

41. What is an equation for the parabola with focus $(-4, 0)$ and directrix $x = 6$?

F $x = -\frac{1}{20}y^2 + 1$

H $x = -\frac{1}{20}y^2 - 1$

G $y = -\frac{1}{20}x^2 + 1$

J $y = -\frac{1}{20}x^2 - 1$

42. What is the graph of $4x^2 + 9y^2 + 24x - 18y + 9 = 0$?

A parabola

B circle

C ellipse

D hyperbola

43. What is the distance between $A(-2, 3)$ and $B(6, -3)$?

F 6

G 8

H 10

J 100

44. The graph of which equation is a circle?

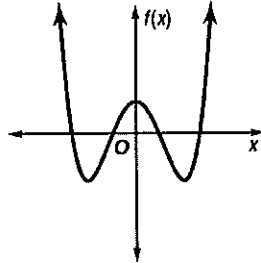
A $3x^2 - 9 = -3y^2$

B $3x^2 + 3x = 3y^2 + 12$

C $3x^2 - y = 12$

D $3x^2 - 17 = 8 - 5y^2$

45. Determine whether the graph represents an *odd degree* or an *even degree* polynomial function. Then state the number of real zeros.



46. One factor of $2x^3 - 7x^2 + 2x + 3$ is $x - 3$. Find the remaining factors.

47. The graph of the equation $9x^2 + y^2 = 9$ is an ellipse.

- Find the center of the ellipse.
- Find the foci of the ellipse.
- Find the lengths of the major and minor axes.

Name _____

Answer sheet for Honors Geometry

1. _____

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2. _____

28. _____

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46. _____

22. _____

47. a. _____

23. _____

b. _____

24. a. _____ b. _____ c. _____

c. _____

25. _____

26. a. _____ b. _____ c. _____