

Name _____

Students going into **Math Analysis**
Summer Packet Work
Chapter P: Prerequisites

This prerequisite chapter is material that you should have mastered in Honors Algebra II. Therefore, you should be able to complete the packet on your own.

Necessary formulas have been included for your convenience. If needed, refer back to your Algebra II notebook. If you get stuck, you could try some internet sites such as the Khan Academy.

This work should be done NEATLY and on separate paper. You should be doing your work on separate paper, not on the packet itself. Please number all problems. ALL ANSWERS SHOULD GO ON THE ANSWER SHEET. Then attach your work to the answer sheet.

It is highly recommended that you purchase a graphing calculator. The calculator that we will be using in class is a TI-83, a TI-83 plus, or a TI 84. (TI-89's are not recommended because they are not allowed in some future classes.) Please bring the calculator the first day of school – if you are not familiar with it, your teacher will be showing you how to use it. You will find that the calculator is used almost every day. You will also need this same calculator for Calculus and Physics and other math and/or science courses.

Good luck and have a nice summer!!

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Summer Packet Work

All answers should be placed on the answer sheet. All work should be completed on separate sheets of paper and attached to the answer sheet. Be sure and number your problems and please be neat!!!

A. *Determine the quadrant(s) in which (x,y) is located so that the condition(s) is (are) satisfied.*

1. $x > 0$ and $y < 0$ 2. $x < 0$ and $y < 0$ 3. $x > 4$

4. Find the coordinates of the point that is located eight units below the x-axis and where the coordinates of the point are equal.

5. What is the y coordinate of any point on the x axis?

6. What is the x coordinate of any point on the y axis?

7. For the line $y = 2 - \frac{1}{2}x$, make a table of values for $x = -2, -1, -\frac{1}{2}, 0, \frac{1}{2}, 1,$ and 2 . Then plot the points on a coordinate plane.

8. a) Graph the following points and connect: $A(4,5), B(4,2), C(0,2)$ b) Find the length of each side of this right triangle c) show that these lengths satisfy the Pythagorean theorem.

B. *Plot the points below. Then find a) the distance between the points, b) the midpoint of the line segment joining those points, and c) the slope between the two points*

9. $(-4,10)$ and $(4,-5)$ 10. $(-7,-4)$ and $(2,8)$

C. *Find the standard form of the equation of the specified circle.*

11. Center: $(0,0)$; radius: 3 12. Center $(-1,2)$; point on the circle $(0,0)$

13. Endpoints of a diameter: $(0,0), (6,8)$

D. *Find the center and radius of each circle:*

14. $x^2 + y^2 = 4$ 15. $(x - 1)^2 + (y + 3)^2 = 24$

E. *Sketch the lines with the given slopes through the point $(2,3)$*

16. 0 17. 1 18. $\frac{1}{2}$ 19. -3

F. *Find the slope and y intercept (if possible) of the equation of the line. Sketch a graph.*

20. $2x + 3y - 9 = 0$ 21. $y = 3x + 12$ 22. $5x - 2 = 0$

G. Find an equation for the line passing through the given points. Write your answer in slope-intercept form.

23. (5,-1), (-5,5)

24. (4,3), (-4,-4)

25. (-1,4), (6,4)

H. Find an equation of the line that passes through the given point and has the indicated slope. Write your answer in slope-intercept form.

26. (0,-2) $m = 3$

27. (6,-1) m is undefined

28. (-10,4) $m = 0$

I. Write equations of the lines through the given point

a) parallel to the given line and

b) perpendicular to the given line.

Write your answer in Standard form.

29. (2,1) $4x - 2y = 3$

30. (0,-3) $5x + 10y = 1$

J. Word Problems

31. Suppose that your salary was \$28,500 in 2004 and \$32,900 in 2006. If your salary follows a linear growth pattern, what will your salary be in 2010?

32. A small college had 2546 students in 2003 and 2702 students in 2005. If the enrollment follows a linear growth pattern, how many students will the college have in 2009?

K. Solve: (Be SURE to show your work!!)

33. $6[x - (2x + 3)] = 8 - 5x$

34. $3(x + 3) = 5(1 - x) - 1$

35. $\frac{5x}{4} + \frac{1}{2} = x - \frac{1}{2}$

36. $\frac{3x}{2} + \frac{1}{4}(x - 2) = 10$

37. $\frac{5x - 4}{5x + 4} = \frac{2}{3}$

38. $\frac{1}{x - 3} + \frac{1}{x + 3} = \frac{10}{x^2 - 9}$

39. $\frac{2}{(x^2 - 6x + 8)} = \frac{1}{x - 4} + \frac{2}{x - 2}$

40. $\frac{4}{x} + \frac{3}{4} = 7$

41. $2x^2 - 9 = 0$

42. $\frac{1}{t^2} + \frac{8}{t} + 15 = 0$

43. $\sqrt{x - 10} = 4$

44. $\sqrt{5 - x} - 3 = 0$

45. $|2x - 1| = 5$

46. $|3x + 2| = 7$

L. Find any points of intersection:

47. $y = 2 - x$ AND $y = 2x - 1$

48. $x - y = -4$ AND $3x + y = 12$

M. Solve the quadratic equation

49. $11x^2 + 33x = 0$

50. $(x + 3)^2 = 81$

51. $x^2 + x - 6 = 0$

N. Graph each on a number line:

52. $x < 3$

53. $x \geq 5$

54. $-3 < x \leq 4$

O. Solve the inequality and sketch the solution on the real number line

55. $-10x \leq 40$

56. $2x + 3 > 4(x + 1)$

57. $1 < 2x + 3 < 9$

58. $|5x| > 10$

59. $|x + 14| + 3 > 17$

60. $|1 - 2x| < 5$

61. $x^2 + 4x - 5 \geq 0$

62. $x^2 - 6x + 9 < 16$

P. Find the vertex and y-intercept for each parabola.

63. $y = 3(x + 5)^2 + 2$

64. $y = 2x^2 - 4x + 5$

Honors Math Analysis
Reference Sheet for Summer packet

Distance: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ between two points (x_1, y_1) and (x_2, y_2)

Midpoint: $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$ between two points (x_1, y_1) and (x_2, y_2)

Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$ two points (x_1, y_1) and (x_2, y_2)

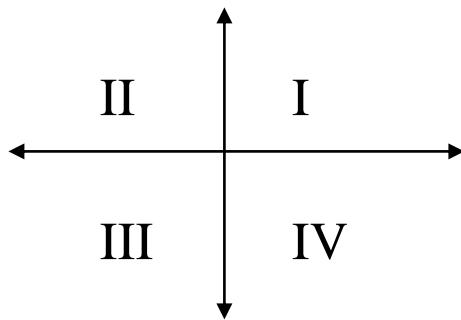
Parallel lines have equal slopes. Perpendicular lines (except horizontal and vertical lines) have slopes that are negative reciprocals of one another.

Slope-Intercept formula: $y = mx + b$ where m is the slope and b is the y-intercept

Point-slope formula: $y - y_1 = m(x - x_1)$ where (x_1, y_1) is a point on the line and m is the slope.

$Ax + By = C$ is the Standard (or general) form of a line. A , B , and C cannot be fractions and A must be positive.

Quadrants:



$(x - h)^2 + (y - k)^2 = r^2$ is the graphing (h,k) form of a circle where (h,k) is the center and r is the radius. Standard (expanded) form is $x^2 + y^2 + ax + by + c = 0$.

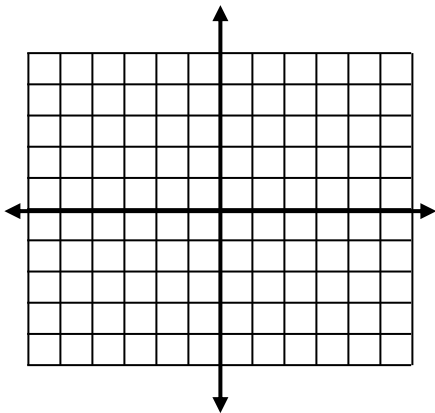
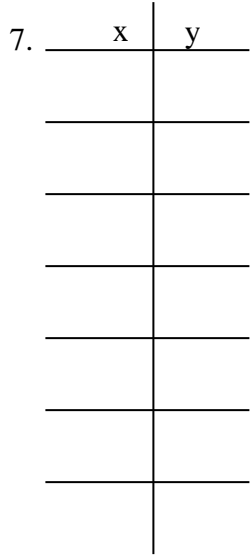
$y = a(x - h)^2 + k$ is the graphing form of parabola where (h,k) is the vertex. The standard form for a parabola is $y = ax^2 + bx + c$ where $\frac{-b}{2a}$ is the x coordinate of the vertex.

Prerequisite Chapter Answer Sheet
 Honors Math Analysis

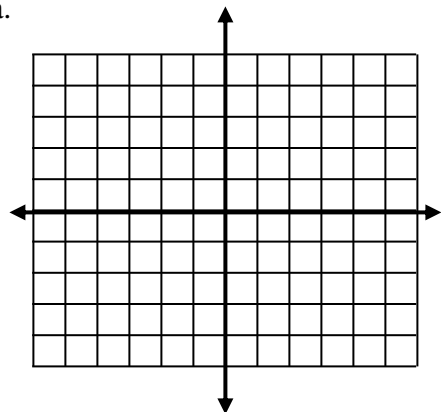
Name _____

Place all answers on this sheet. Attach work.

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____

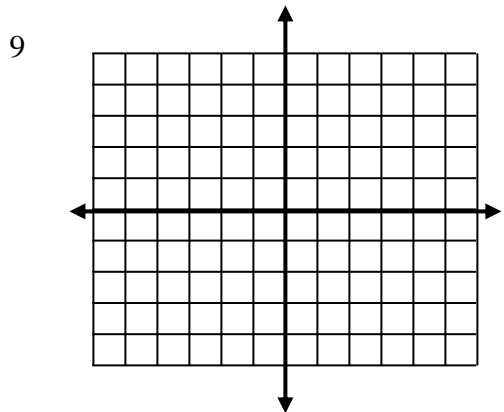


8. a.

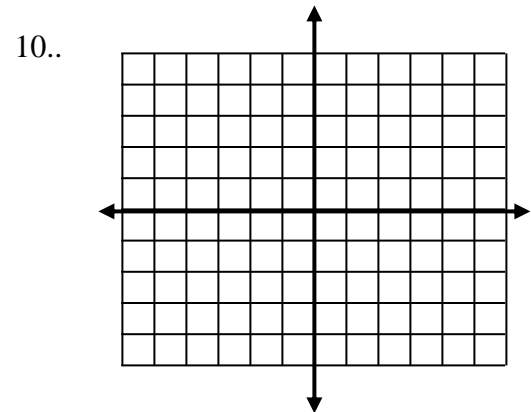


b. $AB =$ _____ $BC =$ _____ $AC =$ _____

c.



a. _____ b. _____ c. _____



a. _____ b. _____ c. _____

11. _____ 12. _____ 13. _____

14. $C =$ _____ $r =$ _____ 15. $C =$ _____ $r =$ _____

33. _____ 34. _____ 35. _____ 36. _____ 37. _____

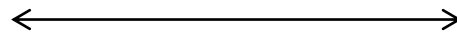
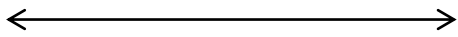
38. _____ 39. _____ 40. _____ 41. _____ 42. _____

43. _____ 44. _____ 45. _____ 46. _____ 47. _____

48. _____ 49. _____ 50. _____ 51. _____

52. _____

53. _____



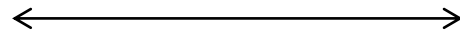
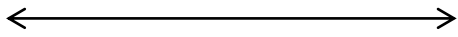
54. _____

55. _____



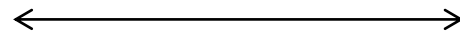
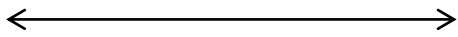
56. _____

57. _____



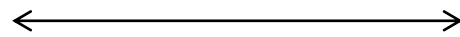
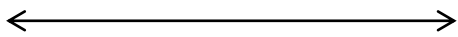
58. _____

59. _____ 54.



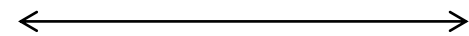
60. _____

61. _____



62. _____

63. vertex = _____ y-intercept = _____



64. vertex = _____ y-intercept = _____