

# Algebra II

# FALL FINAL

# Review Booklet

QUESTIONS 1 - 10 MAY BE DONE WITH A CALCULATOR

QUESTIONS 11 - 53 ARE TO BE DONE WITHOUT A CALCULATOR

Name \_\_\_\_\_

Use the table to find the following.

x	-2	2	5	-3	0	7	2
y	12	15	18	10	16	13	16

- Find the correlation coefficient ( r ) \_\_\_\_\_
- Find the equation for the line of best fit. \_\_\_\_\_
- Use the equation of the line of best fit to find y, when x = -10. \_\_\_\_\_

4. Evaluate  $\frac{2}{3}x^3 + \frac{3}{4}x^2 - 2x + 1$ , when  $x = -6$  \_\_\_\_\_

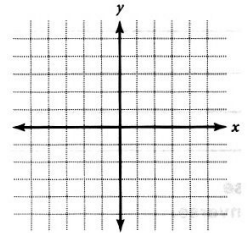
Write the augmented matrix and solve the system.

$$5. \begin{cases} 3x + 2y + z = 1 \\ x - y - z = -5 \\ 6x + 4y + 2z = 2 \end{cases}$$

Solution: \_\_\_\_\_

6. A baseball is hit upward modeled by the formula  $h(t) = 80t - 16t^2$ . What is the maximum height reach by the baseball and how long does it take for the ball to hit the ground? \_\_\_\_\_

7. Determine consecutive values of x between which each real zero is located.  
 $f(x) = -6x^3 + 5x^2 - x - 3$



zeros: \_\_\_\_\_

8. Solve using the quadratic formula.  $-2x^2 + 3x + 1 = 0$  \_\_\_\_\_

9. Evaluate the expression.  $\left(\frac{-8}{5}\right)^3$  \_\_\_\_\_

10. Find the coordinates of the vertex and the equation of the axis of symmetry.  
 $f(x) = 5x^2 - 12x - 4$  vertex = \_\_\_\_\_  
axis = \_\_\_\_\_

11. Simplify the expression  $-7x + 28y - 8z - 15x - 12y + 13z$  \_\_\_\_\_

12. Use the table to find the range and domain of the relation. Then determine if the relation is a function. D: \_\_\_\_\_

x	-2	2	5	-3	0	7	2
y	12	15	18	10	16	13	16

R: \_\_\_\_\_

function          not function

13. Determine if the following are linear.  $3x + 4y = 12$  \_\_\_\_\_

$x^2 + y^2 = 4$  \_\_\_\_\_

14. Find the x-intercept and y-intercept of the  $-3x + 2y = -18$ .  
(remember ordered pairs) x-intercept: \_\_\_\_\_  
y-intercept: \_\_\_\_\_

15. Find each of the following if  $f(x) = -2x^2 - 4x + 6$   $f(-3) =$  \_\_\_\_\_

$f(2) =$  \_\_\_\_\_

16. Write the equation of the line in slope-intercept form, that passes through the point (9, -8) and is perpendicular to the line  $y = -3x + 5$ . \_\_\_\_\_

17. Describe the transformations that changed  $f(x) = x^2$  to  $g(x) = -(x + 5)^2 - 3$ . \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

18. Evaluate the expression for  $x = -4$   $-5|-3x + 7| - |-25|$  \_\_\_\_\_

\_\_\_\_\_

19. Solve the inequality, then given your solution in interval notation. \_\_\_\_\_

$$\frac{3x + 9}{3} > -12$$

#### 4 NO CALCULATOR IS TO BE USED FOR 11 - 53

20. Solve for  $x$       $|x - 5| = 38$

---

21. What is the slope of the line parallel to  $5x - 2y = 10$ .

---

22. Solve the inequality, then give your solution in interval notation

$$|6x - 10| \leq 14$$

---

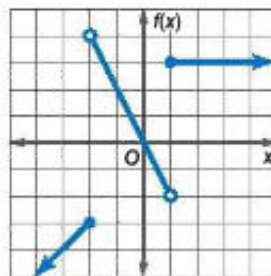
23. Which of the points would be on the line that is perpendicular to the line  $x = 5$  and contains the point  $(-5, -6)$ ?

$(-5, 8)$

$(8, -6)$

$(5, 0)$

24. Write the piecewise functions of the graph.

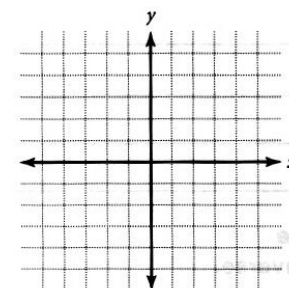


---

---

---

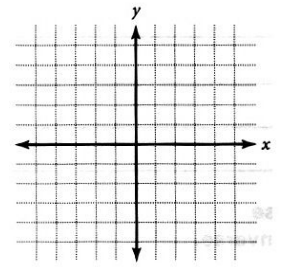
25. Graph:  $y < |x - 2| + 5$



26. Write in standard form:      $3y = 6x - 9$

---

27. Find the axis of symmetry, vertex and graph  $y = -3(x - 3)^2 - 4$



Axis: \_\_\_\_\_

Vertex: \_\_\_\_\_

Solve by method of your choice. Check your solution.

28. 
$$\begin{cases} y = 2x - 4 \\ 7x - 5y = 14 \end{cases}$$

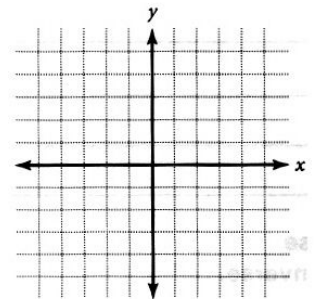
\_\_\_\_\_

29. 
$$\begin{cases} 2x + 3y = 18 \\ 5x - y = 11 \end{cases}$$

\_\_\_\_\_

30. Graph each system of linear inequalities.

$$\begin{cases} y < 2x + 3 \\ y \geq 3x - 1 \\ y > -3 \end{cases}$$



31. Find the coordinates of the vertices of the figure formed by the system below.

$$\begin{cases} y \geq -x - 3 \\ y < 4x + 2 \\ x < 1 \end{cases}$$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

32. On opening night of the drama club's play, they made \$1366. They sold a total of 199 tickets. They charged \$8 for each adult ticket and \$5 for each child's ticket. Write a system of equations that can be used to find the number of adult tickets and the number of children's tickets sold.

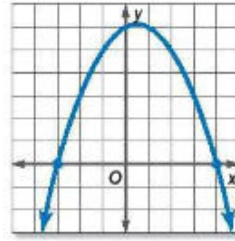
\_\_\_\_\_

\_\_\_\_\_

## 6

## NO CALCULATOR IS TO BE USED FOR 11-53

33. Solve by using the graph and state the domain and range.



\_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

34. Simplify:  $(-5 + 6i)(4 + 3i)$

\_\_\_\_\_

35. Simplify:  $\frac{1 + 3i}{3 - i}$

\_\_\_\_\_

36. Solve by factor.  $3x^2 - 2x - 8 = 0$

\_\_\_\_\_

37. Solve:  $(x - 2)^2 = 48$

\_\_\_\_\_

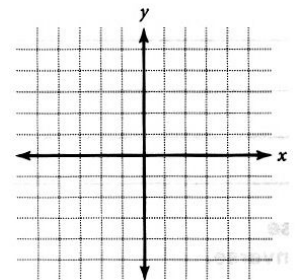
38. Find the term needed to form a perfect square trinomial. Write the resulting Perfect square trinomial in factored form used to complete the square.

\_\_\_\_\_

$$x^2 + 2x - 48 = 0$$

\_\_\_\_\_

39. Graph the quadratic inequality for  $y < -(x + 2)^2 - 4$



40. Find the y-intercept and the equation of the axis of symmetry for the quadratic function:  $f(x) = x^2 - 14x + 3$

y-intercept: \_\_\_\_\_  
axis = \_\_\_\_\_

41. Use the quadratic formula to solve the equation  $ax^2 + bx + c = 0$ .

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad -2x^2 = -3x - 1$$

\_\_\_\_\_

42. Divide:  $(3x^2 - 5x + 24) \div (x + 3)$

\_\_\_\_\_

43. Write a quadratic equation with the roots -3 and 6 in the form  $ax^2 + bx + c = 0$ .

\_\_\_\_\_

44. Simplify. Use positive exponents.  $\frac{(x^3 y^{-5})(x^5 y^9)}{(x^{-2} y^8)^3}$

\_\_\_\_\_

45. Simplify. Use positive exponents.  $\left(\frac{h^5 h^{-9}}{-3h^{-5}}\right)^3$

\_\_\_\_\_

46. Simplify. Use positive exponents.  $(-5a^5 b^2 c^5)(17a^8 b^{-8} c^{-4})$

\_\_\_\_\_

47. Evaluate if  $x = 11$ ,  $y = 7$ , and  $z = -3$   $\frac{10(x - y)^2}{3xy^2z}$

\_\_\_\_\_

**8 NO CALCULATOR IS TO BE USED FOR 11-53**

48. Divide:  $(-2x^3 - 4x^2 + 7x - 4) \div (x - 2)$

\_\_\_\_\_

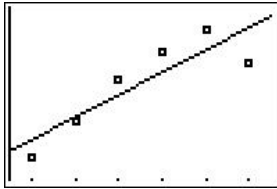
49. Find  $P(-2)$  for the function:  $P(x) = 2x^4 - 5x^3 + 3x^2 - 2x + 8$

\_\_\_\_\_

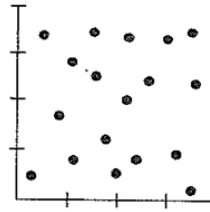
50. Which correlation coefficient for the data graphed below is closer to 1 and which is closer to 0?

Close to 1: \_\_\_\_\_

A.



B.



Close to 0: \_\_\_\_\_

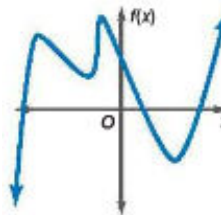
51. Simplify:  $5x^2(4x^2y^3 - 6xy^4 + 9x^2y + 10y)$

\_\_\_\_\_

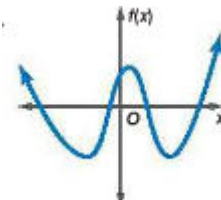
52. Simplify:  $4(a^2 + 5a - 6) - 3(2a^3 + 4a - 5)$

\_\_\_\_\_

53. Use the graphs to determine whether they represent an odd or even degree function and state the number of real zeros.



\_\_\_\_\_  
\_\_\_\_\_



\_\_\_\_\_  
\_\_\_\_\_