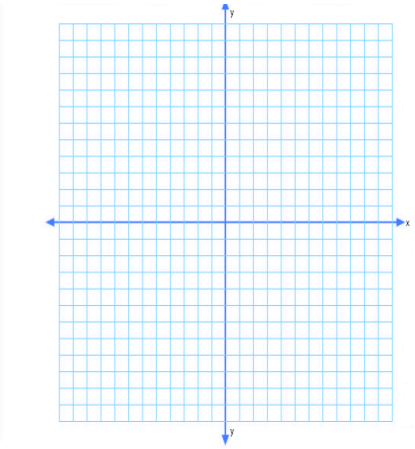
Algebra 2 Midterm Review (Chapter 1 – 6.2)

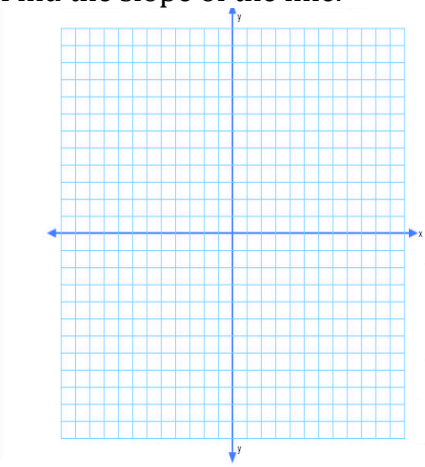
1. Factor $36x^2 - 121$.

2. Factor. $x^2 - 14x + 24$

3. Write the equation of the parabola in vertex form.



4. Find the slope of the line.

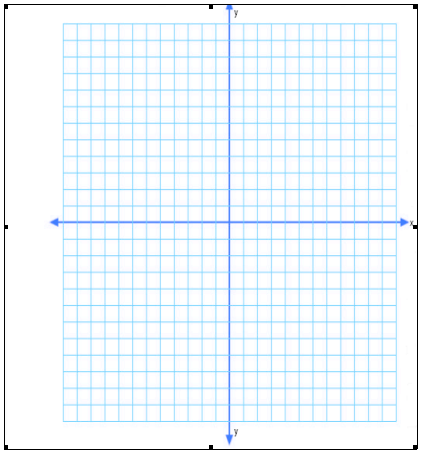


5. Solve the system.
$x + y + 2z = 3$
$2x + y + 3z = 7$
$-x - 2y + z = 10$

6. Solve by factoring. $2x^2 - 9x + 4 = 0$

7. Find the GCF. Then factor. $18x^2 + 12x$

8. Graph the solution to the system of inequalities.
$x + y \le 3$
$x + 2y \le 10$

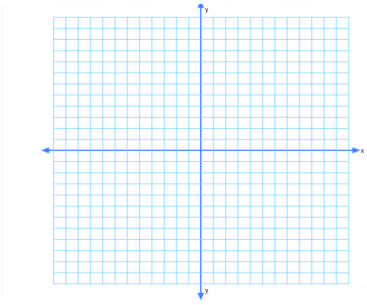


9. Determine whether the function is linear or quadratic. Identify the quadratic, linear and constant terms. $y = 3x^2 + (x + 2)(x - 3)$

10. Find the standard form of the equation of the line. Slope = $\frac{-2}{3}$; (2, -4)

11. Find the slope through the pair of points (-3, 5) and (4, -1).

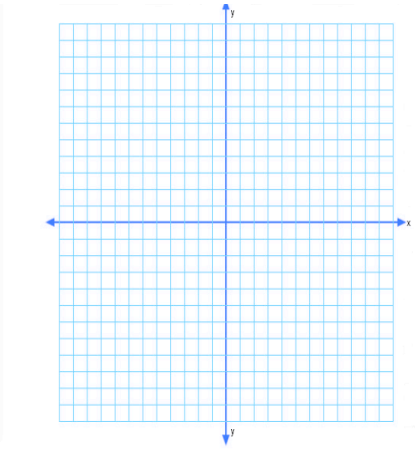
12. Graph the system.
$x + 2y = -7$
$2x - 3y = 0$



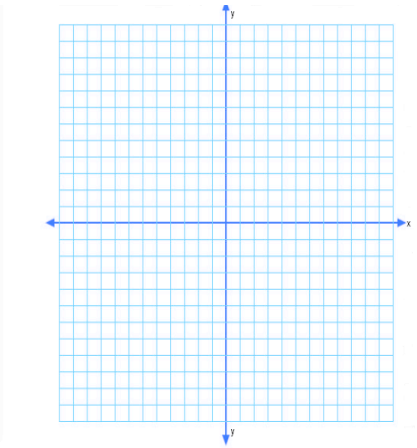
13. Factor. $x^2 - 81$

14. Factor. $4x^2 - 5x - 6$

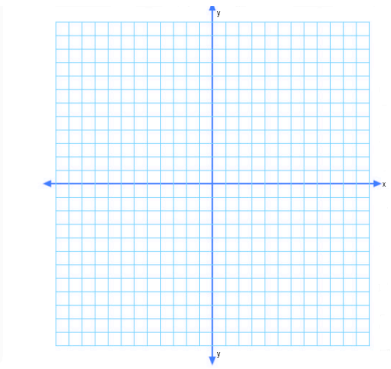
15. Graph y = |x – 3|



16. Identify the equation and then graph the line through (-2, 1) and parallel to y = -3x + 1



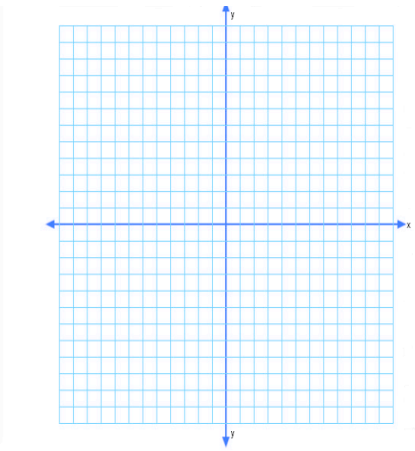
17. Graph $y = x^2 + 2$



18. Let f(x) = 4x + 1 and g(x) = x + 2. Find $(f \circ g)(7)$.

19. If f(x) = -2x + 5, find f(-3).

20. Graph y < | x + 5 |



21. Find the point slope form of the equation of the line passing through the pair of points. (-2, 0) and (1, -3).

22. Write the equation in standard form.
$y = \frac{4}{3}x + \frac{7}{3}$

23. Find the determinant of $\begin{vmatrix} 3 & -2 \\ 5 & 1 \end{vmatrix}$

24. Find the determinant of $\begin{vmatrix} 0 & 2 & -1 \\ 3 & -2 & 2 \\ 1 & 0 & -3 \end{vmatrix}$

Use the following matrices to simplify questions 25 – 29.

A= $\begin{vmatrix} 2 & 3 \\ -5 & 2 \end{vmatrix}$ B = $\begin{vmatrix} -1 & 7 \\ -4 & 2 \end{vmatrix}$ C = $\begin{vmatrix} -3 & 4 \\ 0 & -6 \end{vmatrix}$

25. A + B

26. B – 2C

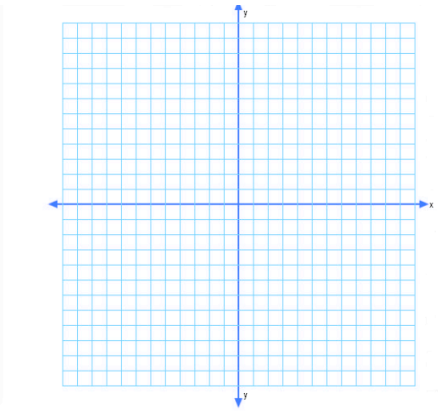
27. -3A

28. 3A + 2B

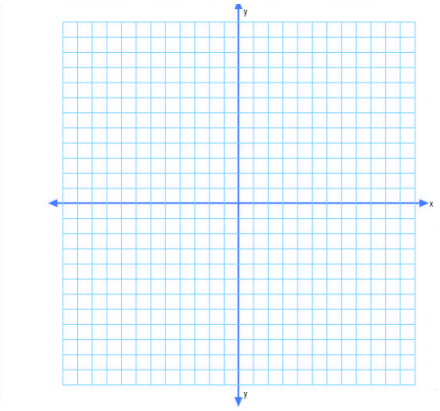
29. C - A

30. Simplify $\begin{vmatrix} -3 & 4 \\ 0 & -6 \end{vmatrix} \begin{vmatrix} -3 & 0 & -4 \\ 2 & 1 & 2 \end{vmatrix}$

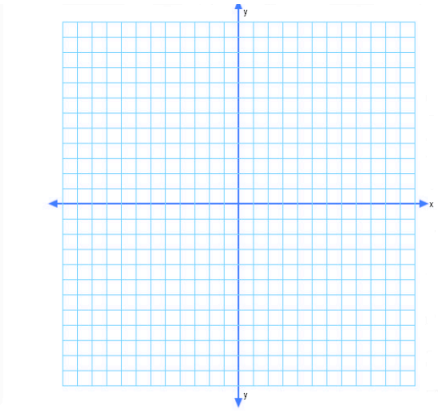
31. Graph $y = (x + 2)^2 - 3$



32. Graph : $y = x^2 - 3$



33. Graph: $y = x^2 + 2x - 3$



34. Solve by the quadratic equation
$2x^2 + 7x = -6$

35. Evaulate the discriminant then tell how many solutions and the type of solution
$x^2 + 10x = -25$

36. Solve by completing the square
$x^2 - 3x = 4$

37. Rewrite in vertex form. Then stare the vertex
$y = x^2 + 4x + 1$

38. Simplify $(12 + 5i) - (2 - i)$

39. Simplify $(8 + i)(2 + 7i)$

40. Solve: $x^2 + 25 = 0$

41. Simplify: $\sqrt{-8} + 8$

42. Simplify: $\sqrt{-32}$

43. Write the polynomial in standard form. Then classify by degree and number of terms. $7x^3 - 10x^3 + x^3 - 2x^2 + 4$

44. Simplify:
$(30x^3 - 49x^2 + 7x) - (15x^3 - 2x^2 + 5x)$

45. $(s + 3)(4s - 1)(3s + 7)$

46. Factor: $x^3 - 36x$

47. Factor: $9x^3 + 6x^2 - 3x$

48. Find the zeros' & state the multiplicity. $y = x(x + 3)^3$