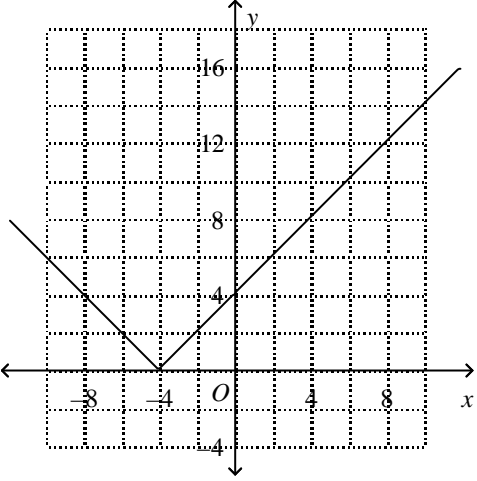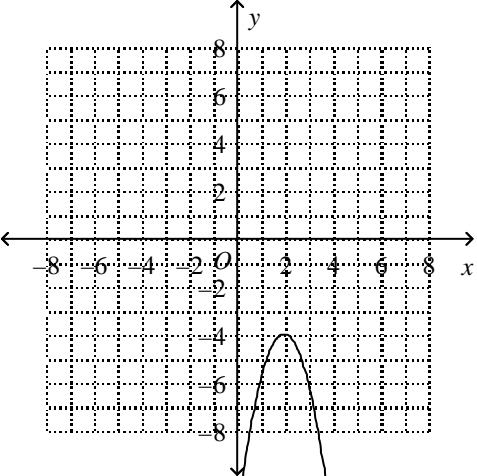1. Graph the equation $y = |x + 4|$.

Answer:

2. Simplify $\begin{bmatrix} -3 & 0 \\ 5 & -7 \end{bmatrix} + \begin{bmatrix} -4 & 2 \\ -1 & 8 \end{bmatrix}$

Answer:

c. $\begin{bmatrix} -7 & 2 \\ 4 & 1 \end{bmatrix}$

3. Graph the equation
$y = -2(x - 2)^2 - 4$.

Answer:

4. Identify the vertex and the *y*-intercept of the graph of the function
$$y = -3(x + 2)^2 + 5.$$

Answer: a. vertex: (–2, 5); *y*-intercept: –7

5. Write the number in the form *a* + *bi*. $$\sqrt{-4}+10$$ **Answer:** $10+2i$	6. Simplify the expression $\left(-6i\right)\left(-6i\right)$. **Answer: b. -36**
7. Write the expression (*x* + 6)(*x* – 4) as a polynomial in standard form. **Answer: c. $x^2 + 2x - 24$**	8. Divide using synthetic division. $$\left(x^4+15x^3-77x^2+13x-36\right)\div\left(x-4\right)$$ **Answer:** d. x^3+19x^2-x+9

9. Find the real-number root.

$$\sqrt[3]{\frac{-125}{343}}$$

Answer: d. $-\dfrac{5}{7}$

10. Solve the equation

$$\sqrt{x+10} - 7 = -5$$

Answer: d. x = -6

11. Solve the equation

$$3y + 20 = 3 + 2y$$

Answer: y = -17

12. Solve the equation $|3x + 5| = 1$.

Answer: *x* = $-1\dfrac{1}{3}$ or *x* = -2

13. Solve the equation $3(y + 6) = 30$ **Answer: c. 4**	14. Write the equation in logarithmic form. $6^4 = 1,296$ **Answer:** a. $\log_6 1,296 = 4$
15. Simplify $$\frac{4a^5}{7b^4} \times \frac{2b^2}{2a^4}$$ **Answer:** $\dfrac{4a}{7b^2}$	16. Solve the following $$\frac{-2}{x+4} = \frac{4}{x+3}$$ **Answer:** $-\dfrac{11}{3}$ **or** $-3\dfrac{2}{3}$

17. Evaluate the expression 5a + 5b given a = -6 and b = -5. **Answer: a. -55**	18. A bag contains 6 red marbles, 6 white marbles, and 4 blue marbles. Find P(red or blue). **Answer: c. 5/8**
19. Simplify $(-2.7)^0$ **Answer: c. 1**	20. Find a solution to the following system of equations. $$-5x + y = -5$$ $$-4x + 2y = 2$$ **Answer: d. (2, 5)**

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21. Solve the inequality $-5x - 7 < 28$	22. Write a compound inequality that the graph could represent.
Answer: a. $x > -7$	**Answer: d.** $-4 \leq x < 2$
23. Simplify $(4)^{-2}$ **Answer:** $\dfrac{1}{16}$	24. Simplify $7a^{-5}b^3$ **Answer:** $\dfrac{7b^3}{a^5}$
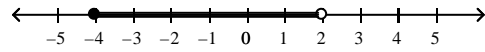
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25. Simplify $\left(3xy^3\right)^2\left(xy\right)^6$

Answer: $9x^8y^{12}$

26. Simplify $\dfrac{x^{14}}{x^7}$

Answer:

x^7

27. Solve $\dfrac{3}{7}x + 5 = 8$

Answer: x=7

28. Solve
3p − 1 = 5(p − 1) − 2(7-2p)

Answer: p=3

29. Find the zeros of y = x(x - 3)(x – 2) **Answer: 0, 3, 2**	30. Add $\dfrac{3}{m+5} + \dfrac{8}{m^2 - 25}$ **Answer:** $\dfrac{3m-7}{(m-5)(m+5)}$
31. Evaluate the expression $\left\|4b-4\right\| + \left\|3-b^2\right\| + 2b^3$ using $b=2$ **Answer: 21**	32. Solve $s = 5r^2 t$, for *t*. **Answer:** $t = \dfrac{s}{5r^2}$

33. Solve $2r - 9 \geq -6$.	34. Solve $\lvert 2x + 10 \rvert < 26$
Answer: $r \geq 1\dfrac{1}{2}$ **or** $r \geq \dfrac{3}{2}$	**Answer:** **−18 < x < 8**
35. Simplify $\dfrac{p^2 - 4p - 32}{p + 4}$ **Answer: p-8**	36. Simplify $\sqrt[3]{128a^{13}b^6}$. Assume that all variables are positive **Answer:** $4a^4 b^2 \sqrt[3]{2a}$

37. Solve $3x^2 = 21$.

Answer: $\sqrt{7}, -\sqrt{7}$

38. Factor the expression
$$8x^2 + 12x - 16$$

Answer: $4(2x^2 + 3x - 4)$

39. Factor the expression
$$x^2 + 14x + 48$$

Answer: (x + 6)(x + 8)

40. Factor the expression
$$x^2 - 6x + 8$$

Answer: (x – 2)(x – 4)

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41. Factor $9x^2 - 16$ **Answer: (3x+4)(3x-4)**	42. Solve by factoring $$4x^2 + 28x - 32 = 0$$ **Answer: –8,** 1
43. Use the Quadratic Formula to solve $5x^2 + 9x - 2 = 0$ **Answer:** $\dfrac{1}{5}, -2$	44. Find the value for x and y in $$\begin{bmatrix} 4 & 3 \\ -1 & 2 \end{bmatrix} = \begin{bmatrix} 4 & y \\ x & 2 \end{bmatrix}$$ **Answer: x = –1, y = 3**

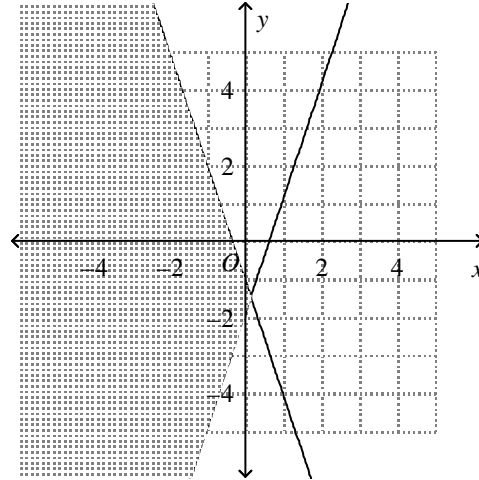45. Solve the system

$5x - y = 5$

$5x - 3y = 15$

Answer: (0, –5)

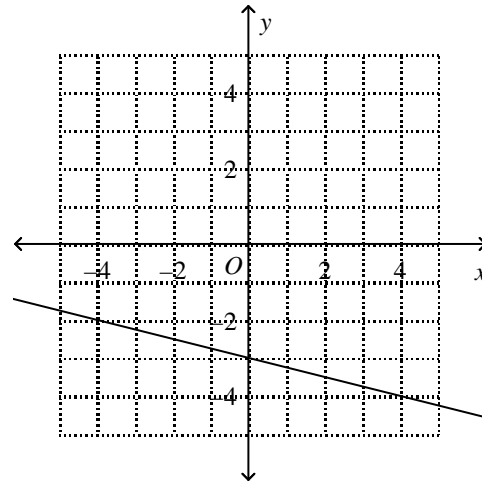46. Solve the system by graphing

$y \leq -3x - 1$

$y > 3x - 2$

Answer:

47. f(x)=5x+2, find f(-4).

Answer: –18

48. Graph the equation $y = -\dfrac{1}{4}x - 3$.

Answer:

49. Write in standard form an equation of the line passing through the point (-2,-2) with the slope of -8.

Answer: 8*x* + *y* = –18

50. Simplify (-1 + 6*i*) + (-4 + 2*i*).

Answer: -5 + 8*i*

51. Divide $3x^3 - 3x^2 - 4x + 3$ by *x* + 3.

Answer: $3x^2 - 12x + 32$, **R –93**

or $3x^2 - 12x + 32 + \dfrac{-93}{x+3}$

52. Write the exponential expression in radical form

$$3x^{\frac{3}{8}}$$

Answer: $3\sqrt[8]{x^3}$

53. Multiply and Simplify

$$\left(7 - \sqrt{2}\right)\left(8 + \sqrt{2}\right)$$

Answer:
$$54 - \sqrt{2}$$

54. Simplify $2\sqrt[4]{2x} + 6\sqrt[4]{2x}$.

Answer: $8\sqrt[4]{2x}$

55. Multiply and simplify $\sqrt{6} \cdot \sqrt{2}$.

Answer: $2\sqrt{3}$

56. Solve $\dfrac{4}{-x} = 2$

Answer: x = -2