Alg 2 Honors Semester 1 REVIEW

Name:

1. Use the distributive property to simplify:
$-(3x+9y)$

2. Evaluate $2a - 3b$ for $a = -2$ and $b = 1$.

3. Solve: $|x-7| > 4$

4. Write the equation of the line, in slope-intercept form, that passes through the point $(-5, -2)$ and has slope -2.

5. Solve the linear system: $x-4y = 15$
$x+y = -5$

6. Graph the system of linear inequalities:
$y \le x+5$
$3x+y \ge 7$

7. Factor: $3x^6+12x^4-96x^2$

8. Plot the number in a complex plane. $9+7i$

9. Solve by the quadratic formula: $4x^2-x-5 = 0$

10. Graph the quadratic function. Label the vertex and axis of symmetry.
$y = x^2-3x-2$

Simplify:

11. $6(x+1) - 2(x+1)$

[A] $6x - 8$

[B] $4x+4$

[C] $4x+8$

[D] $6x - 4$

12. $-4-4x^5y-3xy+2x^5y-4xy+3$

[A] $-6x^5y+xy-1$

[B] $-2x^{10}y^2+7xy+1$

[C] $-2x^5y-7xy-1$

[D] $-6x^5y+x^2y^2+1$

Simplify:

13. $4^2\left(x^{-8}\right)^{-3} + 4x^{-8}y \cdot 2xy^5 + 3x^{-7}y^6 - 2^3\left(y^7\right)^3$

[A] $16x^{-11} + 8x^{-8}y^5 + 3x^{-7}y^6 - 8y^{10}$

[B] $8x^{24} + 11x^{-7}y^6 - 6y^{21}$

[C] $16x^{24} + 11x^{-7}y^6 - 8y^{21}$

[D] $16x^{24} + 9991x^{-7}y^6 - 8y^{21}$

14. The literature club is printing a storybook to raise money. The print shop charges $3 for each book, and $35 to create the film. How many books can the club print if their budget is $740?

[A] 235

[B] 247

[C] 227

[D] 255

15. Solve for v: $J = 2u^2v$.

[A] $v = \dfrac{2u^2}{J}$

[B] $v = 2u^2 - J$

[C] $v = \dfrac{J}{2u^2}$

[D] $v = J - 2u^2$

16. Solve for A: $B = \dfrac{4}{5}(A - 11)$.

[A] $\dfrac{5B + 55}{4}$

[B] $\dfrac{5B + 40}{5}$

[C] $\frac{5B + 44}{4}$

[D] $\frac{5B + 51}{5}$

17. The length and width of the floor of a room are each 11 meters. The height is 4 meters. A spider, on the floor in a corner, sees a fly on the ceiling in the corner diagonally opposite. If the fly does not move, what is the shortest distance the spider can travel to reach the fly, to the nearest tenth of a meter?

[A] 19.6 m

[B] 26.0 m

[C] 16.1 m

[D] 18.6 m

18. Solve: $x - 3 \leq 5$ or $x + 4 \geq 14$

[A] $x \geq 10$

[B] $x \leq 8$

[C] $8 \leq x \leq 10$

[D] $x \leq 8$ or $x \geq 10$

19. On a road in the city of Troutdale, the maximum speed is 55 miles per hour and the minimum speed is 30 miles per hour. If x represents speed, which sentence best expresses this condition?

[A] $x - 30 < 55$

[B] $55 \geq x \geq 30$

[C] $55 \geq x \leq 30$

[D] $55 \leq x \leq 30$

20. Solve: $|x - 4| < 4$

[A] $0 \leq x \leq 8$

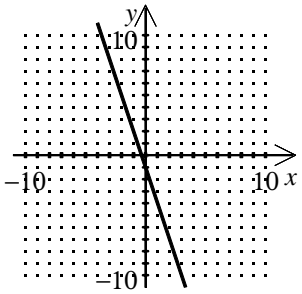
[B] $0 < x < 8$

[C] $x \leq 0$ or $x \geq 8$

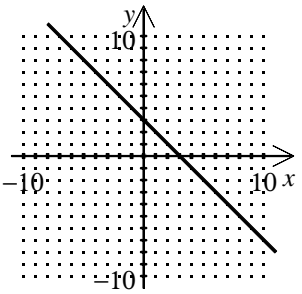
[D] $x < 0$ or $x > 8$

21. Graph $f(x) = 3x - 1$.

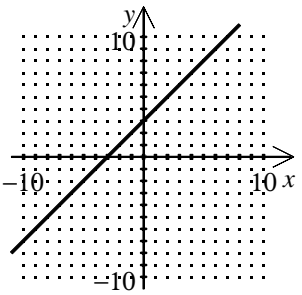
[A]



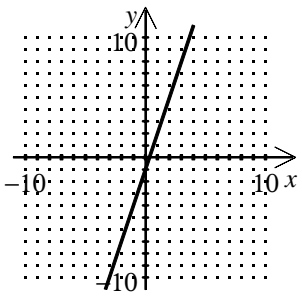
[B]



[C]



[D]



22. Find the range of the relation $\{(-5, -3), (-3, -2), (2, -1)\}$.

[A] {–5, –3, 2}

[B] {3, 2, 1}

[C] {5, 3, –2}

[D] {–3, –2, –1}

23. Which of the following is a function?

[A] {(3, –6), (4, –6), (2, –6)}

[B] $4x^2 + y^2 + 2 = 9$

[C] {(–6, 2), (–6, –5), (–5, 3)}

[D] $x = y^2 - 5$

24. Find the slope of the line passing through the points (3, 2) and (5, 7).

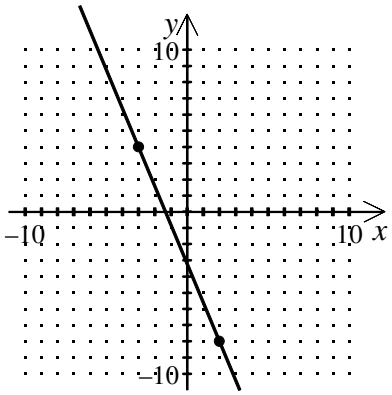
[A] $\frac{9}{8}$

[B] $\frac{5}{2}$

[C] $-\frac{6}{5}$

[D] $\frac{2}{5}$

25. Find the slope of the line.



[A] 4

[B] $\frac{1}{4}$

[C] $-\frac{5}{12}$

[D] $-\frac{12}{5}$

26. In 1982 the pollution in a local lake was rated at 1.4 parts per million. By 1988 it had risen to 4.4 parts per million. Which of the following expresses the rate of change in parts per million from 1982 to 1988?

[A] $\frac{1}{6}$

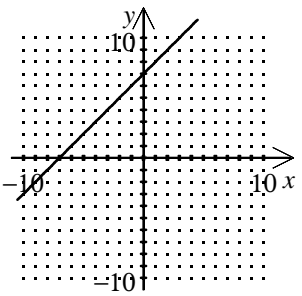
[B] $\frac{1}{3}$

[C] 3

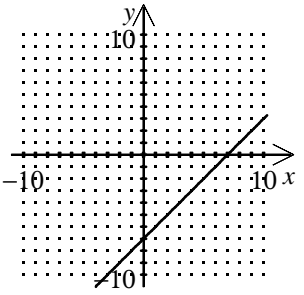
[D] $\frac{1}{2}$

27. Graph: $x + y = 7$

[A]

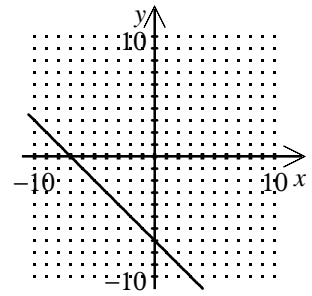


[B]

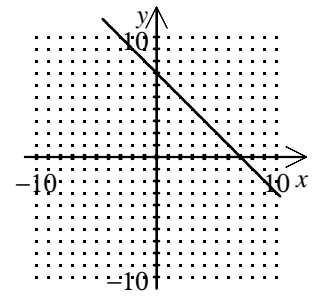


Name:

[C]



[D]



28. In 1979 the Wincom river was 40 feet below the bridge. Because of silt build-up in the river bottom the river was only 25 feet below the bridge by 1985. Which of the following gives the correct equation for *d*, the distance of the river from the bridge, where $t = 0$ represents 1979? If nothing is done about the silt, what year will the river reach the bridge?

[A] $d = 40 - \frac{5}{2}t$; 1995

[B] $d = \frac{2}{5}t - 40$; 1997

[C] $d = 40 + \frac{2}{5}t$; 1997

[D] $d = 40 + \frac{5}{2}t$; 1995

29. Write the slope-intercept form of the line that passes through the point $(-5, -1)$ and has slope -3.

[A] $y = -3x + 16$

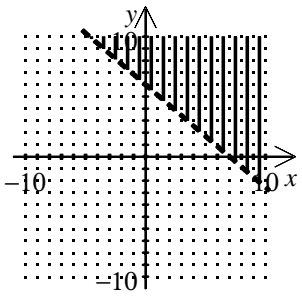
[B] $y = 3x + 16$

[C] $y = 3x - 16$

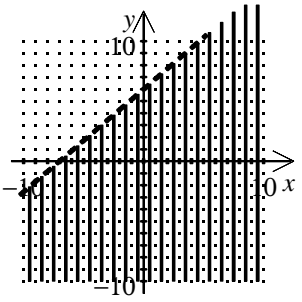
[D] $y = -3x - 16$

30. Graph: $6x - 7y < -42$

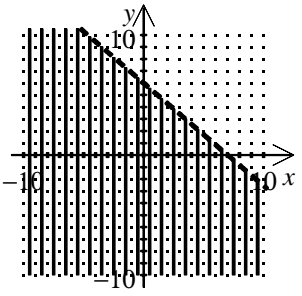
[A]



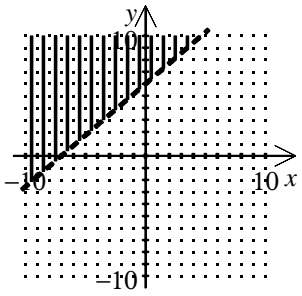
[B]



[C]



[D]



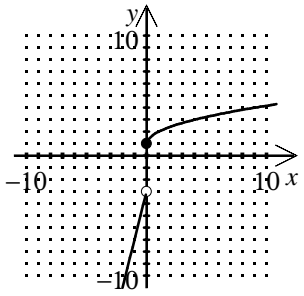
31. Graph the function:

$$f(x) = \begin{cases} \sqrt{x} + 1, & x \geq 0 \\ -4x - 3, & x < 0 \end{cases}$$

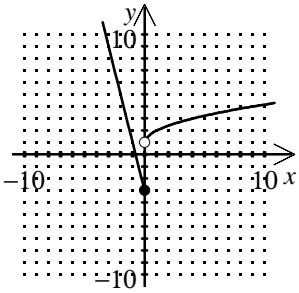
Alg 2 Honors Semester 1 REVIEW

Name:

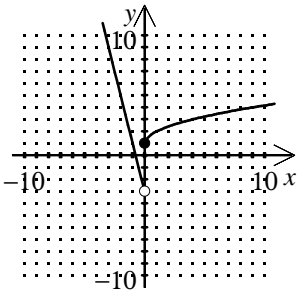
[A]



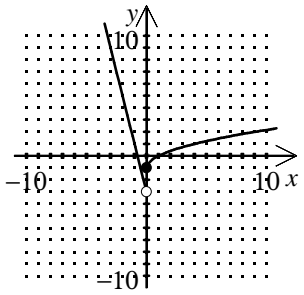
[B]



[C]

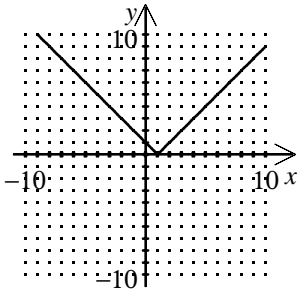


[D]

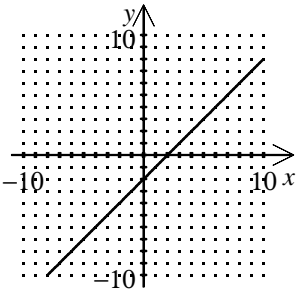


32. Graph the function defined by $y = |x-2|$.

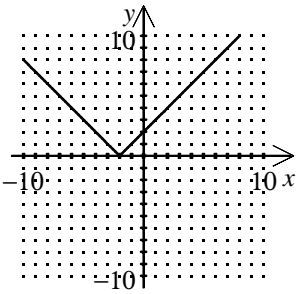
[A]



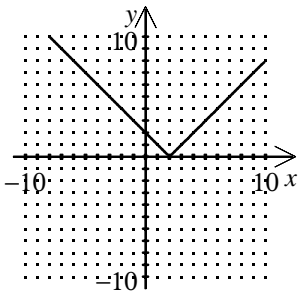
[B]



[C]



[D]



Simplify:

33. $\left(j^2k^4\right)^5$

[A] $j^{10}k^{20}$

[B] j^7k^{20}

[C] $j^{10}k^4$

[D] j^7k^9

34. $\left(\frac{m^7}{n^8}\right)^4$

[A] $\frac{m^{11}}{n^{12}}$

[B] $\frac{m^{28}}{n^{32}}$

[C] $\frac{m^{11}}{n^8}$

[D] $\frac{m^{28}}{n^8}$

35. Use synthetic substitution to evaluate $f(x) = 9x^3 + 6x^2 - 2x + 16$ when $x = 6$.

[A] $f(x) = 238$

[B] $f(x) = 2164$

[C] $f(x) = 2167$

[D] $f(x) = 2171$

36. Multiply: $(x-5)(x^2-3x-2)$

[A] $x^3 - 3x^2 + 10$

[B] $x^3 - 8x^2 + 13x + 10$

[C] $x^3 - 8x^2 - 17x + 10$

[D] $x^3 - 2x^2 + 13x + 10$

37. Factor: $64y^2 - 25$

[A] $(64y+1)(y-25)$

[B] $(8y+5)(8y-5)$

[C] $(8y+5)(8y+5)$

[D] $(8y-5)(8y-5)$

38. Factor completely: $2x^3 - 2x^2 + 8x$

[A] $2x(x-1)(x+4)$

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

[C] $2(x^3 - x^2 + 4x)$

[D] $x(2x^2 - 2x + 8)$

39. Simplify: $27^{2/3}$

[A] 27

[B] 18

[C] 9

[D] $\frac{1}{3}$

40. Solve the equation. Check for extraneous solutions. $\sqrt{x+2} = x$

[A] no solution

[B] –1

[C] 2

[D] 2, –1

41. The velocity of sound in air is given by the equation $v = 20\sqrt{273 + t}$ where v is the velocity in meters per second and t is the temperature in degrees Celsius. Find the temperature when the velocity of sound in air is 315 meters per second. Round the answer to the nearest degree.

[A] 37°C

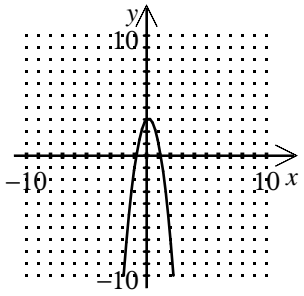
[B] none of these

[C] –31°C

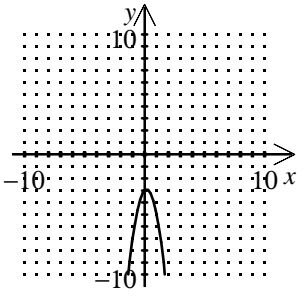
[D] –43°C

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

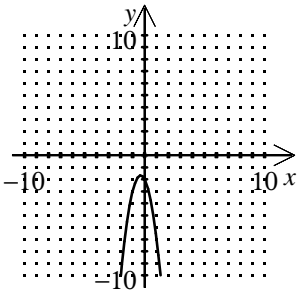
[A]



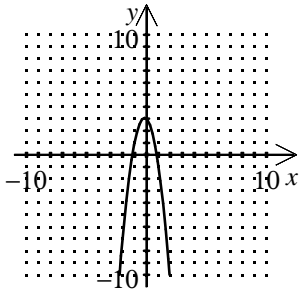
[B]



[C]



[D]



43. Solve: $x^2 + 8x = 0$

[A] 0, –8

[B] 0, 8

[C] –8, 7

[D] –8, 8

44. Solve by completing the square: $x^2 - 2x - 15 = 0$

[A] 3, 5

[B] –3, 5

[C] 3, –5

[D] –3, –5

45. Find the maximum value of the quadratic equation: $y = -9x^2 + 126x - 431$

[A] max = –431

[B] max = –7

[C] max = –892

[D] max = 10

46. The volume of one of the buildings in the downtown area is 861,184 cubic meters. The building is 8 times as tall as the radio tower on top of the building. The square base has a side that is 29 times 4 meters less than the height of the radio tower. How tall is the radio tower?

[A] 12 meters

[B] 10 meters

[C] 8 meters

[D] 16 meters

47. Find the absolute value of the complex number. $2 + 5i$

[A] 4.58

[B] 5.39

[C] 21

[D] 29

48. Solve: $(5x+4)^2 = 42$

[A] $\frac{-4 - \sqrt{42}}{5}, \frac{-4 + \sqrt{42}}{5}$

[B] $\frac{-4 - \sqrt{42}}{10}, \frac{-4 + \sqrt{42}}{10}$

[C] $\frac{+4 - \sqrt{42}}{5}, \frac{+4 + \sqrt{42}}{5}$

[D] $\frac{+4 - \sqrt{42}}{10}, \frac{+4 + \sqrt{42}}{10}$

49. Write the expression as a complex number in standard form. $(5+7i) - (3-9i)$

[A] $8-2i$

[B] $78-24i$

[C] $2+16i$

[D] $8+2i$

50. What are the solutions to the equation?
$x^2 = -x+72$

[A] $x = 1$ or $x = -72$

[B] $x = 36$ or $x = -2$

[C] $x = 8$ or $x = -9$

[D] $x = 18$ or $x = -4$

Alg 2 Honors Semester 1 REVIEW

Name:

Reference: [1.1.2.12]

[1] $-3x-9y$

Reference: [1.2.1.18]

[2] -7

Reference: [1.7.1.90]

[3] $x < 3$ or $x > 11$

Reference: [2.4.1.46]

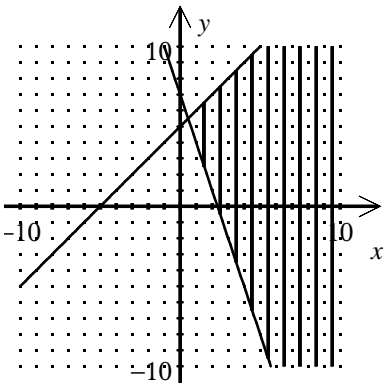
[4] $y = -2x-12$

Reference: [3.2.1.21]

[5] (–1, –4)

Reference: [3.3.1.45]

[6]

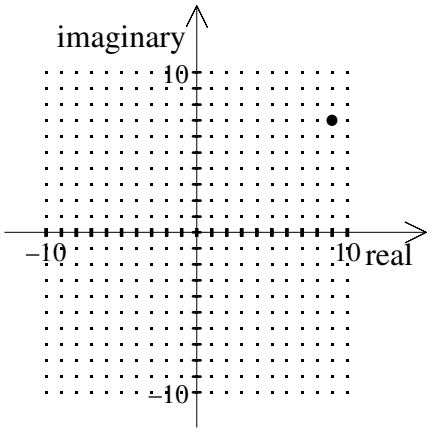


Reference: [6.4.1.52]

[7] $3x^2\left(x^2+8\right)(x-2)(x+2)$

Reference: [5.4.1.69]

[8]

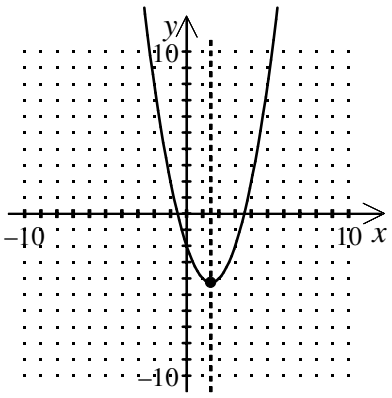


Reference: [5.6.1.117]

[9] $\left(-1,\ \frac{5}{4}\right)$

Reference: [5.1.1.3]

[10]



axis of symmetry: $x=\frac{3}{2}$

vertex: $\left(\frac{3}{2},\ -\frac{17}{4}\right)$

Reference: [1.2.2.36]

[11] [B]

Reference: [1.2.2.37]

[12] [C]

Reference: [1.2.2.38]

[13] [C]

Reference: [1.3.2.49]

[14] [A]

Name:

Reference: [1.4.1.54]
[15] [C]

Reference: [1.4.1.58]
[16] [C]

Reference: [1.5.2.76]
[17] [D]

Reference: [1.6.2.88]
[18] [D]

Reference: [1.6.2.89]
[19] [B]

Reference: [1.7.1.91]
[20] [B]

Reference: [2.1.2.11]
[21] [D]

Reference: [2.1.1.2]
[22] [D]

Reference: [2.1.1.4]
[23] [A]

Reference: [2.2.1.15]
[24] [B]

Reference: [2.2.1.17]
[25] [D]

Reference: [2.2.2.28]
[26] [D]

Reference: [2.3.2.41]
[27] [D]

Reference: [2.4.1.58]
[28] [A]

Reference: [2.4.1.52]
[29] [D]

Reference: [2.6.1.77]
[30] [D]

Reference: [2.7.1.90]
[31] [C]

Reference: [2.8.1.113]
[32] [D]

Reference: [6.1.1.6]
[33] [A]

Reference: [6.1.1.3]
[34] [B]

Reference: [6.2.1.20]
[35] [B]

Reference: [6.3.1.40]
[36] [B]

Reference: [6.4.1.50]
[37] [B]

Reference: [6.4.1.49]
[38] [B]

Reference: [7.1.1.5]
[39] [C]

Reference: [7.6.1.82]
[40] [C]

Reference: [7.6.2.90]
[41] [B]

Reference: [5.1.1.4]
[42] [B]

Reference: [5.2.1.29]
[43] [A]

Reference: [5.5.1.100]
[44] [B]

Reference: [5.5.2.114]
[45] [D]

Reference: [6.4.2.64]
[46] [C]

Reference: [5.4.2.91]
[47] [B]

Reference: [5.4.1.62]
[48] [A]

Reference: [5.4.1.72]
[49] [C]

Reference: [5.2.1.31]
[50] [C]