Intermediate Algebra
REVIEW for FINAL EXAM

1. Find the slope for the line passing through the points $A(-8, 4)$ and $B(-1, -2)$.

[A] $-\frac{7}{6}$

[B] $-\frac{2}{9}$

[C] $-\frac{6}{7}$

[D] $-\frac{11}{6}$

2. The length of the hypotenuse in a right triangle is 13 centimeters. If the length of one leg is 12 centimeters, find the length of the other leg.

[A] 5 cm

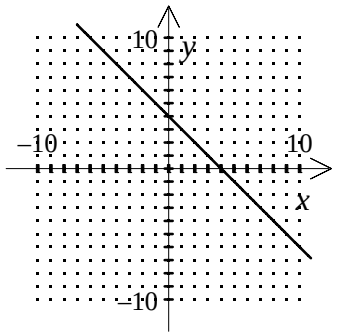
[B] 25 cm

[C] 12 cm

[D] 1 cm

3. Graph: $x + y = 4$

[A]



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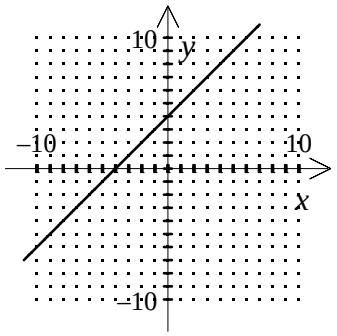

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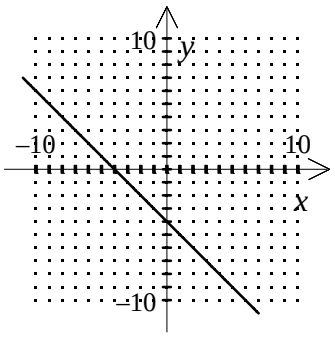

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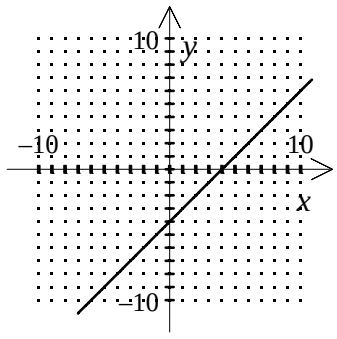
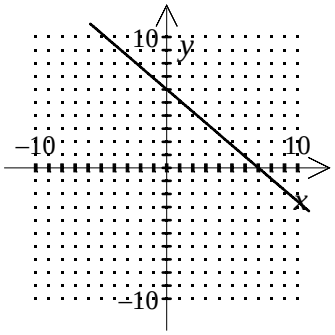


4. Graph: $6x - 7y = -42$

[A]



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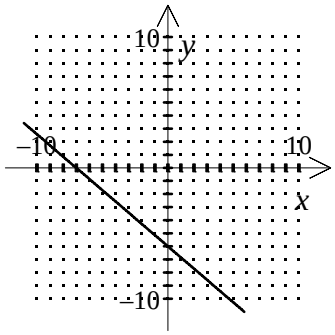

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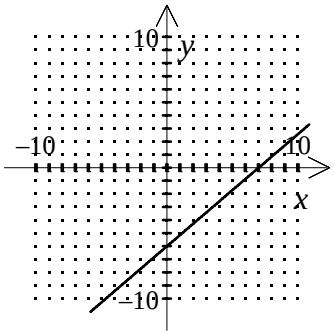

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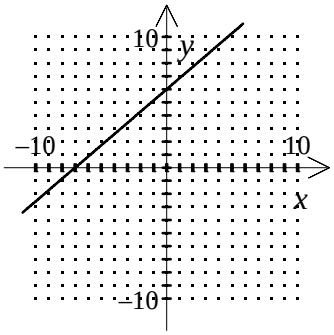
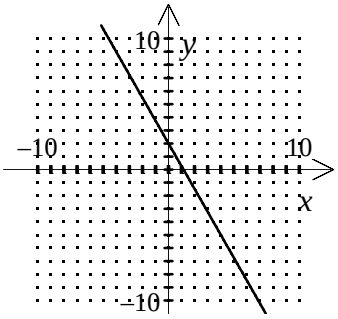


5. Graph: $y = \frac{4}{7}x + 2$

[A]



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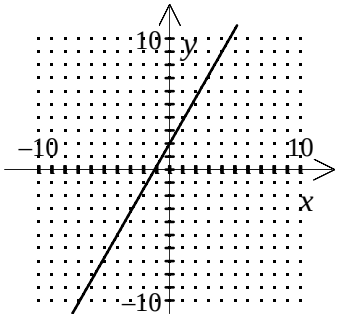

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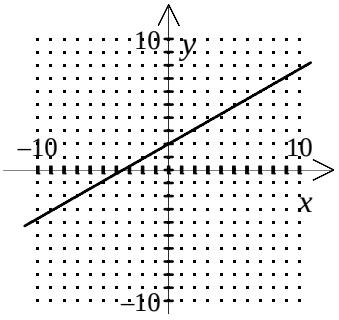

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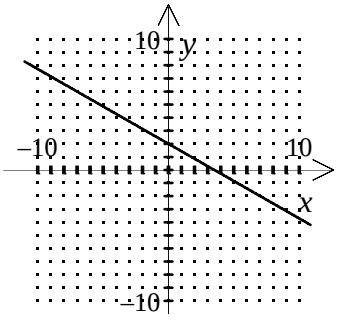


6. Give the intercepts of $3x + 6y = 9$.

[A] *x*-intercept is (6, 0); *y*-intercept is (0, 3)

[B] *x*-intercept is (0, 3); *y*-intercept is (6, 0)

[C] *x*-intercept is $(0,\ 3)$; *y*-intercept is $\left(\frac{3}{2},\ 0\right)$

[D] *x*-intercept is $(3,\ 0)$; *y*-intercept is $\left(0,\ \frac{3}{2}\right)$

7. Write the standard form of the equation of the line with slope –4 passing through the point (2, 4).

[A] $4x + y = 12$

[B] $-x + 4y = 18$

[C] $x - 4y = -18$

[D] $-4x + y = -12$

8. Give the equation of the line that contains $(2, 4),$ and $(-3, 4)$.

[A] $y = 4$

[B] $y = -\frac{7}{4}x + \frac{15}{2}$

[C] $x = 2$

[D] $y = -\frac{7}{4}x + \frac{26}{5}$

9. Give the slope-intercept form of the equation of the line that is perpendicular to $5x + 6y = 3$ and contains (4, 3).

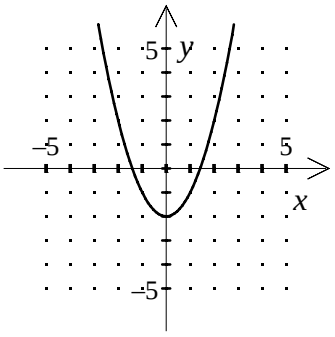
[A] $y = \frac{6}{5}x + \frac{39}{5}$

[B] $y = \frac{5}{6}x - \frac{1}{3}$

[C] $y = \frac{6}{5}x - \frac{9}{5}$

[D] $y = -\frac{6}{5}x + \frac{39}{5}$

10. Find the domain and range for the function graphed below.



[A] Domain: All Real Numbers x; Range: $y \geq -2$

[B] Domain: All Real Numbers x; Range: $y < -2$

[C] Domain: All Real Numbers x; Range: $y > -2$

[D] Domain: All Real Numbers x; Range: All Real Numbers y

11. Determine the domain of $y = \sqrt{x-16}$.

[A] $\{x|x \geq -16\}$ [B] $\{x|x \geq 16\}$

[C] all real numbers [D] $\{x|x \leq -4\}$

12. Find $f(2)$ given $f(x) = -3x^2 + x - 10$.

[A] –18[B] –14

[C] –10 [D] –20

13. Which of the ordered pairs is a solution of the system of equations?

$$y = -\frac{1}{5}x$$
$$x + 3y = 6$$

[A] $(-15,\ 3)$ [B] $(-30,\ 6)$

[C] (15, –3 [D] (5, 1)

14. Solve the system by substitution: $x - 3y = -3$
$3x - 9y = -7$

[A] (3, 3)

[B] (3, 2)

[C] dependent (many solutions)

[D] inconsistent (no solution)

15. Solve: $4x - 2y = -8$
$x + 2y = -12$

[A] (–4, –4)

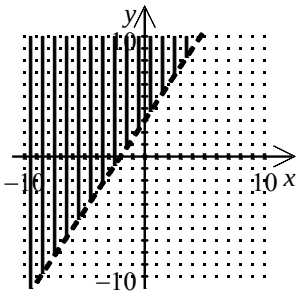
[B] no solution

[C] (–24, –4)

[D] $(0,\ 4)$

16. Graph: $3x + 2y < 6$

[A]



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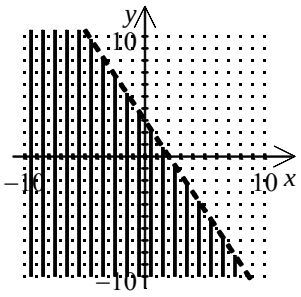

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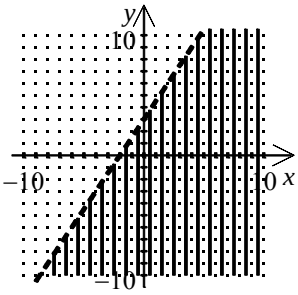

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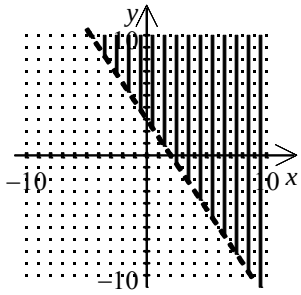
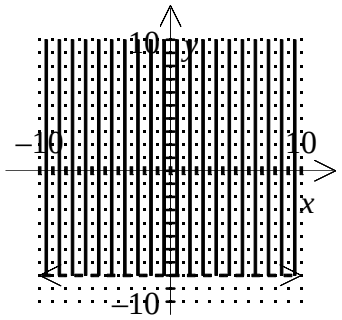


17. Graph: $-8x < 64$

[A]



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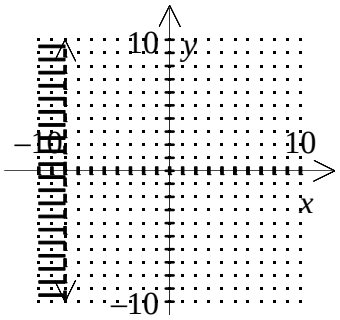

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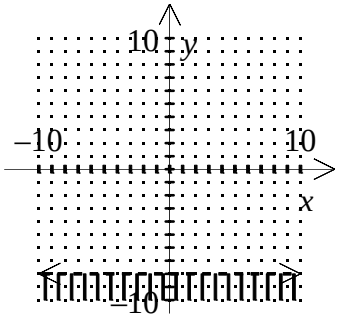

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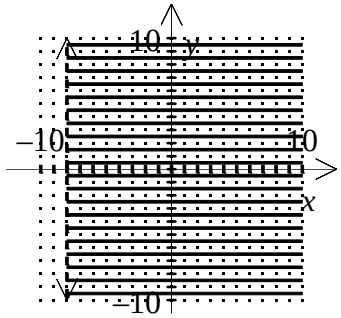
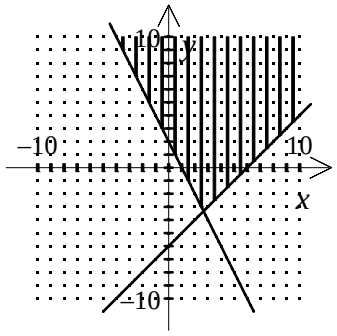


18. Graph the system of inequalities:

$y \leq x - 6$

$2x + y \leq 2$

[A]



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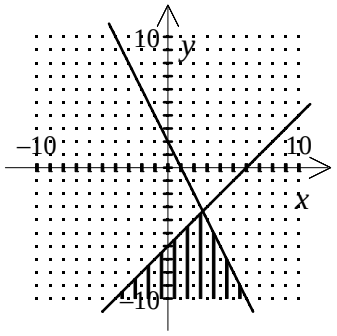

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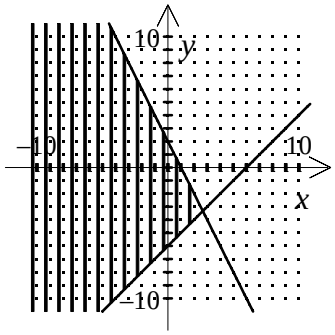

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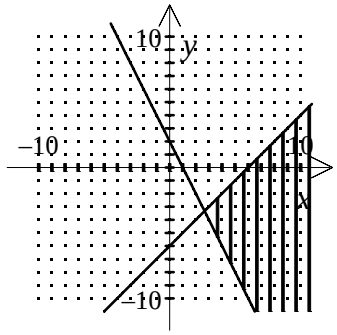

19. The sum of two numbers is one hundred seventy-five. Their difference is forty-five. What are the numbers?

[A] 65 and 110

[B] 60 and 115

[C] 75 and 100

[D] 55 and 120

20. A solution of 50% vinegar is to be mixed with a solution of 30% vinegar to form 200 liters of a 46% solution. How many liters of the 50% solution must be used?

[A] 160 liters

[B] 150 liters

[C] 130 liters

[D] 184 liters

21. Subtract: $(x^3 + 3x) - (-8x + 5 + 4x^3)$

[A] $7x^3 - 5x + 5$

[B] $5x^3 - 11x - 5$

[C] $-3x^3 + 11x - 5$

[D] $9x^3 + 7x + 5$

22. Multiply: $2f^4(3f^4 + 5f^2 + 4f - 5)$

[A] $6f^8 + 10f^6 + 8f^5 - 10f^4$

[B] $6f^8 + 2f^6 + 4f^5 - 5f^4$

[C] $5f^8 + 7f^6 + 6f^5 - 3f^4$

[D] $6f^{16} + 10f^8 - 2f^4$

23. Divide: $\frac{4y - 28y^2}{4y}$

[A] $7y$

[B] $-7y$

[C] $1 - 6y$

[D] $1 - 7y$

24. Factor: $2x^3 - 2x^2 + 10x$

[A] $2x(x^2 - x + 5)$

[B] $2(x^3 - x^2 + 5x)$

[C] $x(2x^2 - 2x + 10)$

[D] $2x(x - 1)(x + 5)$

25. Factor: $49x^2 - 81y^2$

[A] $(7x + 9y)(7x - 9y)$

[B] $(7x - 9y)^2$

[C] $(7x + 9y)^2$

[D] $(7x + 9)(7x - 9)$

26. Factor: $g^3 - 125$

[A] $(g - 5)(g^2 + 25)$

[B] $(g + 5)(g^2 - 5g + 25)$

[C] $(g - 5)^3$

[D] $(g - 5)(g^2 + 5g + 25)$

27. Solve: $\frac{2}{x} + \frac{4}{8x} = 4$

[A] no solution

[B] $x = \frac{5}{8}$

[C] $x = 6$

[D] $x = \frac{1}{6}$

28. Solve for b: $S = 9a^2b$

[A] $b = S + 9a^2$

[B] $b = \frac{S}{9a^2}$

[C] $b = S - 9a^2$

[D] $b = 9a^2S$

29. Simplify: $\left(\frac{-3a^4b^5c^0}{2a^5b^6c^6}\right)^{-5}$

[A] $-\frac{32b^5c^{30}}{243a^5}$

[B] $\frac{32a^5}{243b^5c^{30}}$

[C] $\frac{243a^5}{32b^5c^{30}}$

[D] $-\frac{32a^5b^5c^{30}}{243}$

30. Multiply: $\frac{8r^2-2r-1}{2r^2-3r-2} \cdot \frac{10r^2+5r}{1-16r^2}$

[A] $\frac{5r}{(1-4r)(r-2)}$

[B] $\frac{(2r+1)(2r-1)}{(1-4r)(r-2)}$

[C] $\frac{5r(2r+1)}{(1-4r)(r-2)}$

[D] $\frac{5r(2r-1)}{(1-4r)(r-2)}$

31. Solve: $\frac{x}{x^2-25} + \frac{5}{x-5} = \frac{1}{x+5}$

[A] –6

[B] 5

[C] 6

[D] no solution

32. Simplify: $\sqrt{28} + \sqrt{63}$

[A] $\sqrt{91}$

[B] $7\sqrt{5}$

[C] $23\sqrt{7}$

[D] $5\sqrt{7}$

33. Rationalize the denominator: $\frac{2}{3\sqrt{x} + \sqrt{y}}$

[A] $\frac{6\sqrt{x} + 2\sqrt{y}}{9x+y}$

[B] $\frac{6\sqrt{x} - 2\sqrt{y}}{9x+y}$

[C] $\frac{6\sqrt{x} - 2\sqrt{y}}{9x-y}$

[D] $\frac{6\sqrt{x} + 2\sqrt{y}}{9x-y}$

34. Solve: $\sqrt{x+5} = 6$

[A] 31

[B] 1

[C] 41

[D] no real number solutions

35. Simplify: $(625)^{3/4}$

[A] $\frac{1}{250}$

[B] 125

[C] $\frac{1}{125}$

[D] 250

36. Simplify: $\left(\frac{f^9}{g^6}\right)^{2/3}$

[A] $\frac{f^{11}}{g^9}$

[B] $\frac{f^3}{g^2}$

[C] $\frac{f^6}{g^4}$

[D] $\frac{f}{g}$

37. Simplify: $\sqrt[4]{x^{14}y^{19}}$

[A] $x^2y^3\sqrt[4]{x^3y^4}$

[B] $x^{10}y^{15}\sqrt{xy}$

[C] $x^3y^4\sqrt{x^2y^3}$

[D] $x^3y^4\sqrt[4]{x^2y^3}$

38. Solve: $x^2+6x+8 = 0$

[A] $-2,\ 4$

[B] $2,\ 4$

[C] $-2,\ -4$

[D] $2,\ -4$

39. Solve: $x^2+5x = 0$

[A] -5

[B] 0, -5

[C] 0, 25

[D] 0, 5

40. Solve: $x^2 - 147 = 0$

[A] $-3\sqrt{7},\ 3\sqrt{7}$

[B] –49, 49

[C] $7\sqrt{3}$

[D] $-7\sqrt{3},\ 7\sqrt{3}$

41. Find the term that must be added to both sides of the equation so that the equation can be solved by the method of completing the square: $x^2 + 6x = 5$

[A] 18

[B] –5

[C] 36

[D] 9

42. Find the discriminant and determine the nature of the roots: $3x^2 - x - 6 = 0$

[A] two unequal real roots

[B] no real roots

[C] one real root and one imaginary root

[D] one real root

43. Solve: $2x^2 + 4x - 5 = 0$

[A] $\frac{-2 + 2\sqrt{14}}{2}, \frac{-2 - 2\sqrt{14}}{2}$

[B] $\frac{-2 + \sqrt{14}}{2}, \frac{-2 - \sqrt{14}}{2}$

[C] $\frac{2 + \sqrt{14}}{2}, \frac{2 - \sqrt{14}}{2}$

[D] $\frac{2 + 2\sqrt{14}}{2}, \frac{2 - 2\sqrt{14}}{2}$

44. Perform the indicated operations and simplify: $\sqrt{-12} + \sqrt{-108}$

[A] $8i\sqrt{3}$

[B] $3i\sqrt{2}$

[C] $i\sqrt{120}$

[D] $-3i\sqrt{2}$

45. Perform the indicated operations and give the answer in standard complex number form:
$-2i(8i + 4) - 8(4 - 4i)$

[A] $48 - 40i$

[B] $16 - 40i$

[C] $-16 + 24i$

[D] $40 - 48i$

[1] [C]

[2] [A]

[3] [A]

[4] [D]

[5] [C]

[6] [D]

[7] [A]

[8] [A]

[9] [C]

[10] [A]

[11] [B]

[12] [D]

[13] [C]

[14] [D]

[15] [A]

[16] [B]

[17] [D]

[18] [B]

[19] [A]

[20] [A]

[21] [C]

[22] [A]

[23] [D]

[24] [A]

[25] [A]

[26] [D]

[27] [B]

[28] [B]

[29] [D]

[30] [D]

[31] [A]

[32] [D]

[33] [C]

[34] [A]

[35] [B]

[36] [C]

[37] [D]

[38] [C]

[39] [B]

[40] [D]

[41] [D]

[42] [A]

[43] [B]

[44] [A]

[45] [C]