1. How many pounds of chocolates selling for $5.40 per pound should be mixed with 2 pounds of chocolates selling for $2.00 per pound to obtain a mixture selling for $4.72 per pound?

[A] 6 [B] 8 [C] 10 [D] 9

2. A plane flies 900 miles, with a tail wind, in 3 hours. It takes the same plane 5 hours to fly the 900 miles when flying against the wind. Which is the plane's speed in still air?

[A] 240 mph [B] 270 mph [C] 300 mph [D] 60 mph

3. Train A leaves a station traveling at 20 miles per hour. Four hours later train B leaves the same station traveling in the same direction at 30 miles per hour. How long does it take for train B to catch up to train A?

[A] 8 hr [B] 5 hr [C] 10 hr [D] 9 hr

4. A solution of 56% alcohol is to be mixed with a solution of 24% alcohol to form 224 liters of a 49% solution. How many liters of the 56% solution must be used?

[A] 110 [B] 175 [C] 165 [D] 196

5. Solve: $-9 \le -3x + 6 \le 12$

[A] $18 \le x \le -3$ [B] $-3 \le x \le 18$ [C] $-2 \le x \le 5$ [D] $5 \le x \le -2$

6. Solve: $3x + 4 > 16 \quad or \quad 2x - 3 < 15$

[A] $x < 9$ [B] $x > 4$ [C] all real numbers [D] no solution

7. Solve: $|x + 4| = 4$

[A] {0} [B] {0, -8} [C] {8, 0} [D] $\emptyset$

8. Solve: $|2x + 4| > 4$

[A] $\{x \mid x \le -4 \quad or \quad x \ge 0\}$ [B] $\{x \mid x < -4 \quad or \quad x > 0\}$

[C] $\{x \mid -4 < x < 0\}$ [D] none of these

9. Find the midpoint of the segment connecting (-2, 8) and (-6, 1)

[A] $\left(-4, \frac{9}{2}\right)$ [B] $(-10, -7)$ [C] $\left(3, \frac{-5}{2}\right)$ [D] $\left(2, \frac{7}{2}\right)$

10. Find $f(2)$ given that $f(x) = 2x^2 + 5x - 21$

[A] 7 [B] -7 [C] 18 [D] -3

11. Determine the equation of the line, in slope-intercept form, that contains the points. $(7,-2)$ and $(4,-5)$

[A] $y = x - 9$ [B] $y = x - \frac{1}{9}$ [C] $y = -x + 9$ [D] $y = -x + \frac{1}{9}$

12. Find the equation of the line, in standard form, that is perpendicular to $4x + 5y = 1$ and contains $(-5,7)$

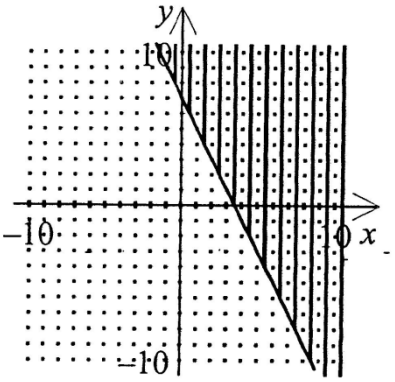
[A] $-5x + 7y = 55$ [B] $-5x + 4y = 53$ [C] $-4x - 5y = 55$ [D] $5x + 4y = 53$

13. Find the equation of the line, in slope-intercept form, that is parallel to $4x + 6y = -3$ and contains $(-3,9)$

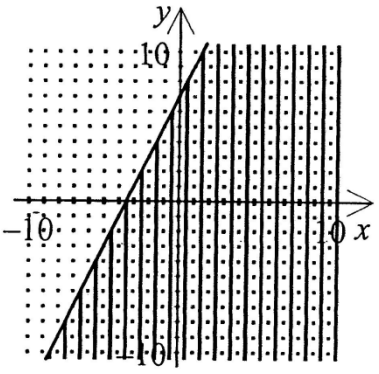
[A] $y = \frac{-3}{2}x - \frac{1}{7}$ [B] $y = \frac{-2}{3}x + 7$ [C] $y = \frac{2}{3}x + 7$ [D] $y = \frac{-2}{3}x - \frac{1}{7}$

14. Graph. $y \leq -2x + 7$

[A]



[B]



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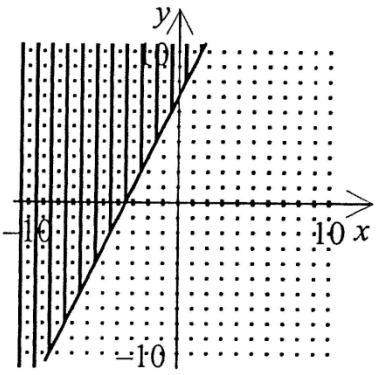

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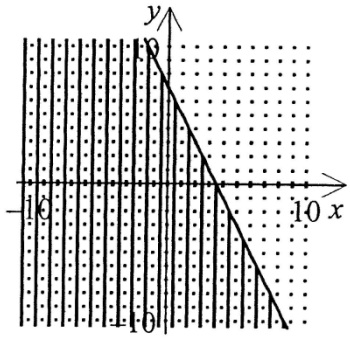
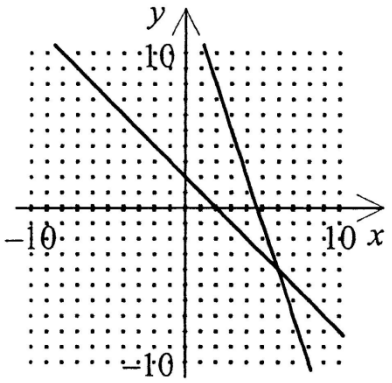


15. Solve by graphing.

$x + y = 2$

$3x - y = 14$

[A]



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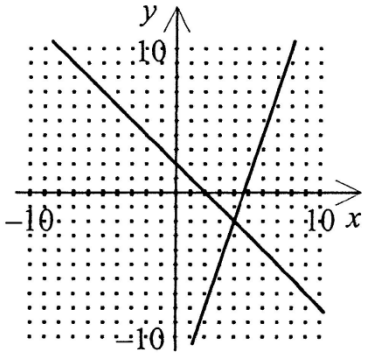

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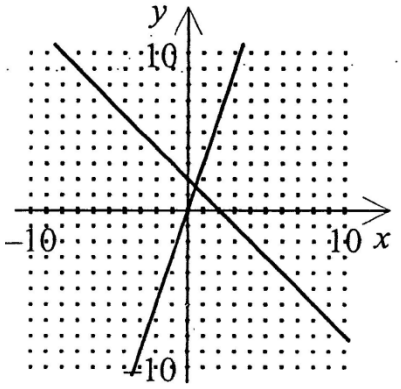
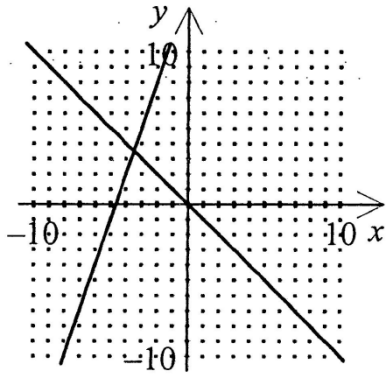


[D]



16. Solve by substitution.

$x + 4y = 7$

$y = 2x + 4$

[A] $(-1,2)$ [B] $(-1,-2)$ [C] dependent [D] inconsistent

17. Solve by the addition method.

$$4x-3y=5$$
$$3x-2y=4$$

[A] $\left(\frac{7}{3},\frac{-3}{2}\right)$ [B] $\left(\frac{-3}{4},\frac{-8}{3}\right)$ [C] $(2,1)$ [D] no solution

18. Evaluate the polynomial: $5m^3-3m^2+9m-9$ when $m=2$

[A] 42 [B] 27 [C] 37 [D] 40

19. Evaluate the polynomial: $-x^2+3xy+y^2$ when $x=2$ and $y=7$

[A] 87 [B] -11 [C] 52 [D] 3

20. Factor. $20x^2-28x^5$

[A] $4(5x^2-7x^5)$ [B] $4x(x-7x^4+5)$ [C] $x^2(20-28x^3)$ [D] $4x^2(5-7x^3)$

21. Factor: $14c^5d^3-12cd^2$

[A] $2(7c^5d^3-6cd^2)$ [B] $2cd^2(7c^4d-6)$

[C] $2cd(7c^4d^2-6d)$ [D] $2cd^2(7c^4d+6)$

22. Factor by grouping. $4x^2-28x-4x+28$

[A] $4(x-7)(x-1)$ [B] $(4x-6)(4x-2)$

[C] $x(4x-6)(4x-2)$ [D] $4x(x-7)(x-1)$

23. Factor by grouping. $3x^2+9x+2x+6$

[A] $(3x+3)(x+2)$ [B] $x(3x+3)+6$ [C] $3+(x+2)(x+3)$ [D] $(3x+2)(x+3)$

24. Factor. $x^2+12x+36$

[A] $(x+6)(x-6)$ [B] $(x+6)^2$ [C] $(x+12)^2$ [D] $(x-6)^2$

25. Factor. $15x^2+4x-4$

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

[C] $(5x-2)(3x+2)$ [D] $(5x+2)(3x-2)$

26. Factor. $25b^2 + 20b + 4$

[A] $(5b+2)(5b-2)$ [B] $(5b+2)^2$ [C] $(5b-4)(-2b+1)$ [D] $(5b-2)^2$

27. Factor: $x^2 - 64$

[A] $(x-8)(x-8)$ [B] $(x+8)(x-8)$ [C] $(x+8)(x+8)$ [D] $(x+8)(x-10)$

28. Factor: $-7x^4 + 7x^2$

[A] $-7x^2(x+1)^2$ [B] $-7x^3(x-1)$

[C] $-7x^2(x+1)(x-1)$ [D] $7x^2(x^2-1)$

29. Solve by factoring. $12x^2 - 11x - 5 = 0$

[A] $\frac{5}{4}, \frac{-1}{3}$ [B] $\frac{-5}{4}, \frac{-1}{3}$ [C] $\frac{5}{4}, \frac{1}{3}$ [D] $\frac{-5}{4}, \frac{1}{3}$

30. Determine the domain of the function. $g(x) = \frac{4x}{x(x-64)}$

[A] $\{x \mid x \neq 64, x \neq 0\}$ [B] $\{x \mid x \neq \pm 64, x \neq 0\}$

[C] $\{x \mid x \neq 8\}$ [D] $\{x \mid x \neq \pm 8\}$

31. Simplify. $\frac{x-1}{3x-y} \cdot \frac{9x^2 - y^2}{2x^2 + 3x - 5}$

[A] $\frac{3x+y}{7}$ [B] $\frac{3x+y}{2x+5}$ [C] $\frac{3x^2+y^2}{2x+5}$ [D] $\frac{3x-y}{7x+3}$

32. Simplify. $\frac{d^4}{ef} \cdot \frac{4e^3 f}{5d^3}$

[A] $\frac{4de^2}{5}$ [B] $\frac{4d^4e^3}{5def}$ [C] $\frac{5d^7}{4e^4f^2}$ [D] $\frac{3}{5}$

33. Simplify. $\dfrac{x+8}{x-8} \div \dfrac{x^2-64}{8-x}$

[A] $\dfrac{1}{x-8}$ [B] $\dfrac{1}{10-x}$ [C] $\dfrac{x+8}{x-8}$ [D] $\dfrac{1}{8-x}$

34. Simplify. $\dfrac{10}{3(x-3)} + \dfrac{2}{3(x-3)}$

[A] $\dfrac{4}{x-3}$ [B] $4(x-3)$ [C] $\dfrac{12}{x-3}$ [D] $\dfrac{1}{3(x-3)}$

35. Simplify. $\dfrac{2}{x+9} + \dfrac{5}{x-9}$

[A] $\dfrac{7x+27}{7}$ [B] $\dfrac{7}{x+9}$ [C] $\dfrac{7}{x^2-81}$ [D] $\dfrac{7x+27}{x^2-81}$

36. Simplify. $-\dfrac{3}{x^2-9} - \dfrac{6}{x+3}$

[A] $-\dfrac{9}{x^2-x-12}$ [B] $\dfrac{-6x+15}{x^2-9}$ [C] $\dfrac{-6x-6}{x^2-9}$ [D] $\dfrac{-6x-21}{x^2-9}$

37. Simplify. $\dfrac{\dfrac{4}{x}+\dfrac{1}{3x}}{\dfrac{4}{3x}-\dfrac{1}{2x}}$

[A] $\dfrac{5}{26}$ [B] $\dfrac{3}{12x^2}$ [C] $\dfrac{26}{5}$ [D] $\dfrac{5}{12x^2}$

38. Simplify. $\dfrac{\dfrac{x^2-18x+81}{-12x}}{\dfrac{x-9}{-2x}}$

[A] $\dfrac{x+81}{6x}$ [B] $\dfrac{x-9}{6}$ [C] $-17x-9$ [D] $\dfrac{x+9}{6}$

39. Solve. $\frac{2}{x}+\frac{6}{6x}=-5$

[A] $\frac{-3}{5}$ [B] $\frac{-8}{35}$ [C] $\frac{-35}{8}$ [D] no solution

40. Solve. $\frac{x}{x^2-1}+\frac{1}{x-1}=\frac{1}{x+1}$

[A] 2 [B] -2 [C] 1 [D] no solution

41. Together, Suzanne and Chris can paint a patio in 16 hours. Working alone, Suzanne can do the job 3 hours faster than Chris. Find the time that each person takes to paint a patio.

[A] Suzanne: 16.3 hr; Chris: 13.3 hr [B] Suzanne: 37.5 hr; Chris: 34.5 hr

[C] Suzanne: 1.4 hr; Chris: 4.4 hr [D] Suzanne: 30.6 hr; Chris 33.6 hr

42. A northbound train left at noon. Two hours later, a southbound train left the same station. At 5:00pm, the two trains were 315 miles apart. Find the rate of each train if the northbound train traveled 15 miles per hour faster than the southbound train.

[A] 30 mph, 45 mph [B] 35 mph, 50 mph

[C] 25 mph, 40 mph [D] 20 mph, 35 mph

43. If x = 0.2 when y = 16.8 and y varies inversely with x, find y when x = 2.1?

[A] y = 176.4 [B] y = 1.6 [C] y = 0.03 [D] y = 7.06

44. Solve the formula for the given variable. P = 2a + 2b for b

[A] $b=\frac{P-2a}{2}$ [B] $b=\frac{P-2}{2a}$ [C] $b=\frac{P}{2a+2}$ [D] $b=\frac{P}{2}-2a$

45. Solve the formula for the given variable.

$C=\frac{100W}{L}$ *for* W

[A] $W=\frac{100C}{L}$ [B] $W=\frac{100}{LC}$ [C] $W=\frac{LC}{100}$ [D] $W=100CL$

46. Simplify. $x^4\left(x^{-2}\right)\left(x^{1/5}\right)$

[A] $x^{11/5}$ [B] x^{12} [C] $x^{6/11}$ [D] $\frac{1}{x^{11/5}}$

47. Simplify. $64^{4/3}$

[A] 512 [B] $\frac{1}{512}$ [C] 256 [D] $\frac{1}{256}$

48. Simplify. $2\sqrt{16x}+7\sqrt{16x}$

[A] $36x$ [B] $9\sqrt{x}$ [C] $36\sqrt{x}$ [D] $9x$

49. Simplify. $\sqrt{6x^4y^4}\sqrt{2x^4y^3}$

[A] $12x^8y^7$ [B] $\sqrt{12x^7y^8}$ [C] $2x^8y^6\sqrt{3}$ [D] $2x^4y^3\sqrt{3y}$

50. Simplify: $\sqrt{5x}\left(\sqrt{x}-6\sqrt{5}\right)$

[A] $15x-30$ [B] $x\sqrt{5}-30\sqrt{x}$ [C] $3\sqrt{5x^2}-6\sqrt{5}$ [D] $15x-30\sqrt{5}$

51. Simplify: $\frac{\sqrt{12x^5y^7}}{\sqrt{3x^3y^8}}$

[A] $\frac{\sqrt{4x^2}}{\sqrt{y}}$ [B] $\frac{\sqrt{36x^8y^{15}}}{\sqrt{3x^3y^8}}$ [C] $\frac{4x^4\sqrt{y}}{y}$ [D] $\frac{2x\sqrt{y}}{y}$

52. Simplify: $\frac{\sqrt{75x^7y^5}}{\sqrt{3x^5y^6}}$

[A] $\frac{\sqrt{225x^{12}y^{11}}}{\sqrt{3x^5y^6}}$ [B] $\frac{5x\sqrt{y}}{y}$ [C] $\frac{\sqrt{25x^2}}{\sqrt{y}}$ [D] $\frac{25x^4\sqrt{y}}{y}$

53. Solve: $\sqrt{b+4}+2=b$

[A] 0, 5 [B] -5 [C] 5 [D] -5, 5

54. Simplify: $\sqrt{-350}$

[A] $5\sqrt{14}i$ [B] $-350i$ [C] $-5\sqrt{14}i$ [D] $\sqrt{-350}i$

55. Simplify: $(-7-4i)+(-2-6i)$

[A] $-10+50i$ [B] $-9-10i$ [C] $-9+10i$ [D] $-5+2i$

56. Simplify: $-11-8i-(-19+13i)$

[A] $8-21i$ [B] $30-5i$ [C] $-30+5i$ [D] $-8+21i$

57. Simplify: $(-6-2i)(7+6i)$

[A] $-30-50i$ [B] $-30+50i$ [C] $-54-22i$ [D] $-54-50i$

58. Simplify: $\dfrac{8+5i}{5+3i}$

[A] $\dfrac{55}{34}-\dfrac{1}{34}i$ [B] $\dfrac{-55}{34}-\dfrac{1}{34}i$ [C] $\dfrac{55}{34}+\dfrac{1}{34}i$ [D] $\dfrac{-55}{34}+\dfrac{1}{34}i$

59. Solve by factoring. $x^2-x-6=0$

[A] -3, 2 [B] -2, 3 [C] 2, 3 [D] -2, -3

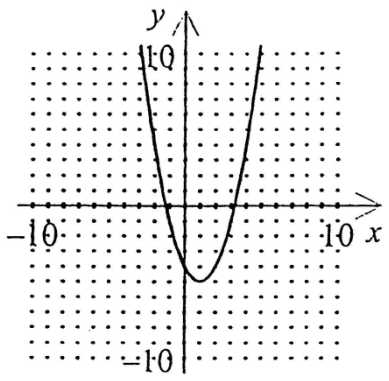
60. Solve using the quadratic formula. $3x^2+4x-5=0$

[A] $\dfrac{2+\sqrt{19}}{3},\dfrac{2-\sqrt{19}}{3}$ [B] $\dfrac{2+2\sqrt{19}}{3},\dfrac{2-2\sqrt{19}}{3}$

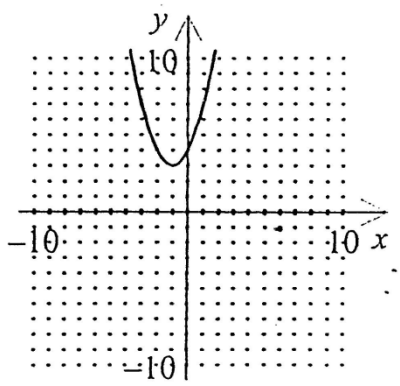
[C] $\dfrac{-2+2\sqrt{19}}{3},\dfrac{-2-2\sqrt{19}}{3}$ [D] $\dfrac{-2+\sqrt{19}}{3},\dfrac{-2-\sqrt{19}}{3}$

61. Find the graph of the equation. $f(x) = x^2 + 2x - 4$

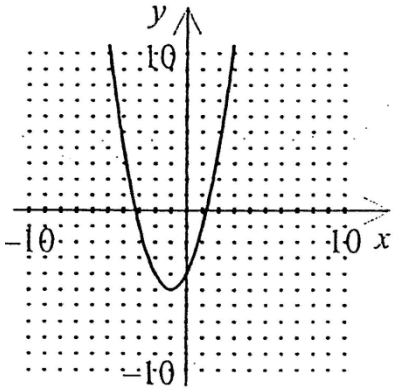
[A]



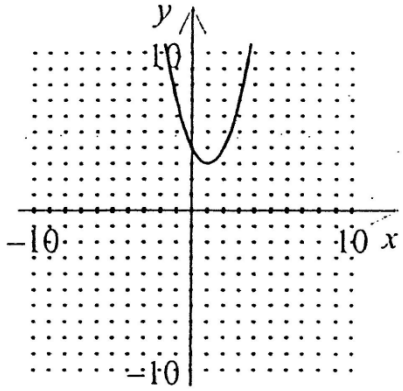
[B]



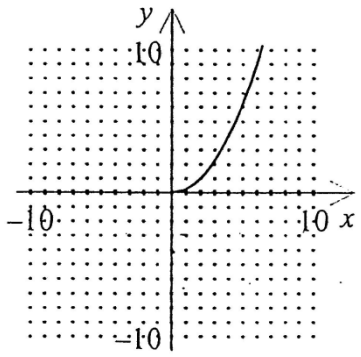
[C]



[D]



62. Identify the domain and range of the following function. $f(x) = \sqrt{4x}$



[A] $D: \{x \mid x \in \text{Re}\,al \quad Numbers\}$
$R: \{x \mid x \in \text{Re}\,al \quad Numbers\}$

[B] $D: \{x \mid x \geq 0\}$
$R: \{y \mid y \leq 10\}$

[C] $D: \{x \mid x \leq 10\}$
$R: \{y \mid y \geq 0\}$

[D] $D: \{x \mid x \geq 0\}$
$R: \{y \mid y \geq 0\}$

1) B
2) A
3) A
4) B
5) C
6) C
7) B
8) B
9) A
10) D
11) A
12) B
13) B
14) D
15) B
16) A
17) C
18) C
19) A
20) D
21) B
22) A
23) D
24) B
25) C
26) B
27) B
28) C
29) A
30) A
31) B
32) A
33) D
34) A
35) D
36) B
37) C
38) B
39) A
40) B
41) D
42) A

43) B
44) A
45) C
46) A
47) C
48) C
49) D
50) B
51) D
52) B
53) C
54) A
55) B
56) A
57) A
58) C
59) B
60) D
61) C
62) D