Integrated 2

Ann Sobrato High School

Summer Math Skills Review

Solve the following systems of equations to find the point of intersection (x, y) for each pair of lines.

1. $y = x - 6$
   $y = 12 - x$

2. $y = 3x - 5$
   $y = x + 3$

3. $x = 7 + 3y$
   $x = 4y + 5$

4. $x = -3y + 10$
   $x = -6y - 2$

5. $y = x + 7$
   $y = 4x - 5$

6. $y = 7 - 3x$
   $y = 2x - 8$

7. $y = 3x - 1$
   $2x - 3y = 10$

8. $x = -\frac{1}{2}y + 4$
   $8x + 3y = 31$

9. $2y = 4x + 10$
   $6x + 2y = 10$

10. $y = \frac{3}{5}x - 2$
    $y = \frac{x}{10}y + 1$

11. $y = 4x + 5$
    $y = x$

12. $4x - 3y = -10$
    $x = \frac{1}{4}y - 1$

13. $x + y = 12$
    $x - y = 4$

14. $2x - y = 6$
    $4x - y = 12$

15. $x + 2y = 7$
    $5x - 4y = 14$

16. $5x - 2y = 6$
    $4x + y = 10$

17. $x + y = 10$
    $x - 2y = 5$

18. $3y - 2x = 16$
    $y = 2x + 4$

19. $x + y = 11$
    $x = y - 3$

20. $x + 2y = 15$
    $y = x - 3$

21. $y + 5x = 10$
    $y - 3x = 14$

22. $y = 7x - 3$
    $4x + 2y = 8$

23. $y = 12 - x$
    $y = x - 4$

24. $y = 6 - 2x$
    $y = 4x - 12$

Find each of the following products.

1. $(3x + 2)(2x + 7)$

2. $(4x + 5)(5x + 3)$

3. $(2x - 1)(3x + 1)$

4. $(2a - 1)(4a + 7)$

5. $(m - 5)(m + 5)$

6. $(y - 4)(y + 4)$

7. $(3x - 1)(x + 2)$

8. $(3a - 2)(a - 1)$

9. $(2y - 5)(y + 4)$

10. $(3t - 1)(3t + 1)$

11. $(3y - 5)^2$

12. $(4x - 1)^2$

13. $(2x + 3)^2$

14. $(5n + 1)^2$

15. $(3x - 1)(2x^2 + 4x + 3)$

16. $(2x + 7)(4x^2 - 3x + 2)$

17. $(x + 7)(3x^2 - x + 5)$

18. $(x - 5)(x^2 - 7x + 1)$

19. $(3x + 2)(x^3 - 7x^2 + 3x)$

20. $(2x + 3)(3x^2 + 2x - 5)$

Problems

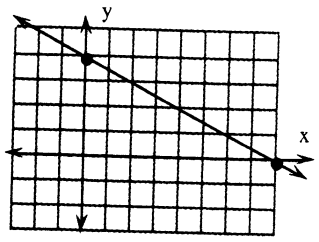
Identify the y-intercept in each equation.

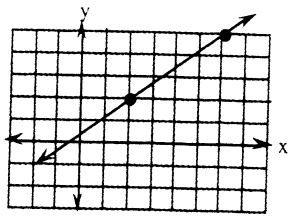
1. $y = \frac{1}{2}x - 2$
2. $y = -\frac{3}{5}x - \frac{5}{3}$
3. $3x + 2y = 12$
4. $x - y = -13$
5. $2x - 4y = 12$
6. $4y - 2x = 12$

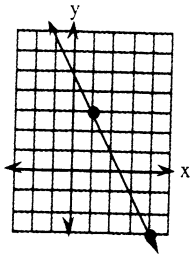
Write the equation of the line with:

7. A slope = $\frac{1}{2}$ and passing through the point $(4, 3)$.
8. A slope = $\frac{2}{3}$ and passing through the point $(-3, -2)$.
9. A slope = $-\frac{1}{3}$ and passing through the point $(4, -1)$.
10. A slope = -4 and passing through the point $(-3, 5)$.

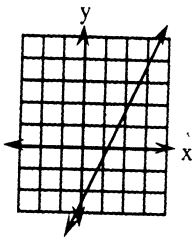
Determine the slope of each line using the highlighted points.

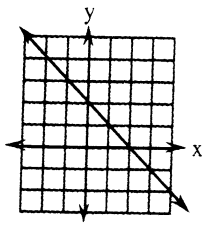
11. 

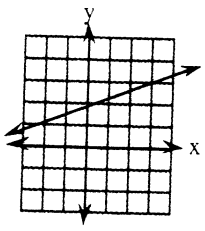
12. 

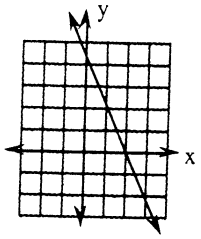
13. 

Using the slope and y-intercept, determine the equation of the line.

14. 

15. 

16. 

17. 

Graph the following linear equations on graph paper.

18. $y = \frac{1}{2}x + 3$
19. $y = -\frac{3}{5}x - 1$
20. $y = 4x$
21. $y = -6x + \frac{1}{2}$
22. $3x + 2y = 12$

Problems

Rewrite each equation in a simpler form and then solve the new equation.

1. $\frac{x}{3}+\frac{x}{2}=5$
2. $3000x + 2000 = -1000$
3. $0.02y - 1.5 = 17$
4. $\frac{x}{2}+\frac{x}{3}-\frac{x}{4}=12$
5. $50x^2 - 200 = 0$
6. $\frac{x}{9}+\frac{2x}{5}=3$
7. $\frac{3x}{10}+\frac{x}{10}=\frac{15}{10}$
8. $\frac{3}{2x}+\frac{5}{x}=\frac{13}{6}$
9. $x^2 - 2.5x + 1 = 0$
10. $\frac{2}{3x}-\frac{1}{x}=\frac{1}{36}$
11. $0.002x = 5$
12. $10+\frac{5}{x}+\frac{3}{3x}=11$
13. $0.3(x + 7) = 0.2(x - 2)$
14. $x+\frac{x}{2}+\frac{3x}{5}=21$
15. $32 \cdot 3x - 32 \cdot 1 = 32 \cdot 8$
16. $5+\frac{2}{x}+\frac{5}{4x}=\frac{73}{12}$
17. $\frac{17}{2x+1}=\frac{17}{5}$
18. $2+\frac{6}{x}+\frac{6}{3x}=3$
19. $2.5x^2 + 3x + 0.5 = 0$
20. $\frac{x}{x-2}=\frac{7}{x-2}$

Problems

Rewrite each expression in a simpler, equivalent form.

1. $y^5 \cdot y^7$
2. $b^4 \cdot b^3 \cdot b^2$
3. $8^6 \cdot 8^2$
4. $(y^5)^2$
5. $(3a)^4$
6. $\frac{m^8}{m^3}$
7. $\frac{12x^9}{4x^4}$
8. $(x^3y^2)^3$
9. $\frac{(y^4)^2}{(y^3)^2}$
10. $\frac{15x^2y^7}{3x^4y^5}$
11. $(4c^4)(ac^3)(3a^5c)$
12. $(7x^3y^5)^2$
13. $(4xy^2)(2y)^3$
14. $\left(\frac{4}{x^2}\right)^3$
15. $\frac{(2a^7)(3a^2)}{6a^3}$
16. $\left(\frac{5m^3n}{m^5}\right)^3$
17. $(3a^2x^3)^2(2ax^4)^3$
18. $\left(\frac{x^3y}{y^4}\right)^4$
19. $\cdot\left(\frac{6y^2x^8}{12x^3y^7}\right)^2$
20. $\frac{(2x^5y^3)^3(4xy^4)^2}{8x^7y^{12}}$
21. $(-27)^{1/3}$
22. $16^{-1/2}$
23. $(16a^8b^{12})^{3/4}$
24. $\frac{144^{1/2}x^{-3}}{(16^{3/4}x^7)^0}$

SOLVING MIXED EQUATIONS AND INEQUALITIES

Problems

Solve these various types of equations.

1. $2(x - 3) + 2 = -4$
2. $6 - 12x = 108$
3. $3x - 11 = 0$
4. $0 = 2x - 5$
5. $y = 2x - 3$
   $x + y = 15$
6. $ax - b = 0$
   (solve for x)
7. $0 = (2x - 5)(x + 3)$
8. $2(2x - 1) = -x + 5$
9. $x^2 + 5^2 = 13^2$
10. $2x + 1 = 7x - 15$
11. $\frac{5-2x}{3} = \frac{x}{5}$
12. $2x - 3y + 9 = 0$
    (solve for y)
13. $x^2 + 5x + 6 = 0$
14. $x^2 = y$
    $100 = y$
15. $x - y = 7$
    $y = 2x - 1$
16. $x^2 - 4x = 0$
17. $x^2 - 6 = -2$
18. $\frac{x}{2} + \frac{x}{3} = 2$
19. $x^2 + 7x + 9 = 3$
20. $y = x + 3$
    $x + 2y = 3$
21. $3x^2 + 7x + 2 = 0$
22. $\frac{x}{x+1} = \frac{5}{7}$
23. $x^2 + 2x - 4 = 0$
24. $\frac{1}{x} + \frac{1}{3x} = 2$
25. $3x + y = 5$
    $x - y = 11$
26. $y = -\frac{3}{4}x + 4$
    $\frac{1}{4}x - y = 8$
27. $3x^2 = 8x$
28. $|x| = 4$
29. $\frac{2}{3}x + 1 = \frac{1}{2}x - 3$
30. $x^2 - 4x = 5$
31. $3x + 5y = 15$
    (solve for y)
32. $(3x)^2 + x^2 = 15^2$
33. $y = 11$
    $y = 2x^2 + 3x - 9$
34. $(x + 2)(x + 3)(x - 4) = 0$
35. $|x + 6| = 8$
36. $2(x + 3) = y + 2$
    $y + 2 = 8x$
37. $2x + 3y = 13$
    $x - 2y = -11$
38. $2x^2 = -x + 7$
39. $1 - \frac{5}{6x} = \frac{x}{6}$
40. $\frac{x-1}{5} = \frac{3}{x+1}$
41. $\sqrt{2x+1} = 5$
42. $2|2x - 1| + 3 = 7$
43. $\sqrt{3x-1} + 1 = 7$
44. $(x + 3)^2 = 49$
45. $\frac{4x-1}{x-1} = x + 1$