Intermediate Algebra / MAT 016
Final Exam Review

1. Solve the equation for y $2y + 2(y-2) = 5y - 3(y-10)$

2. Solve the given equation for x. $-1.5 - 5x = 11.0$

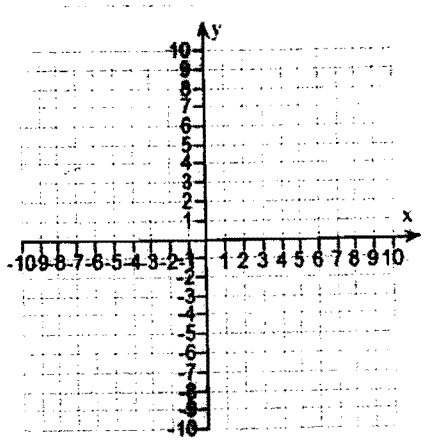
3. Solve the given equation for x. $\frac{x}{7} + \frac{x}{6} = \frac{9}{7}$

4. Solve the given equation for x. $\frac{x-2}{4} + \frac{x+8}{3} = \frac{7}{4}$

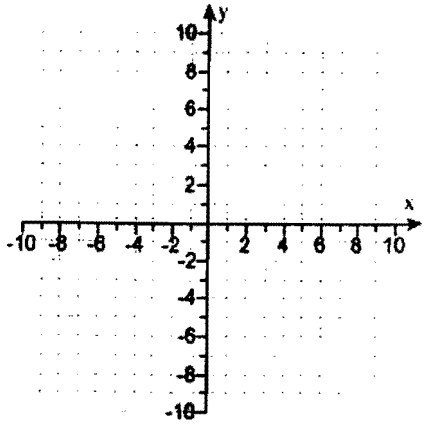
5. Solve the inequality. $-3x + 6 \geq -12$

6. Solve. $7(x-4) < 4(2x-1)$

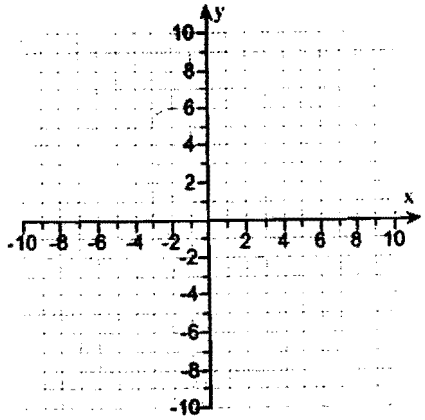
7. Graph the linear function by finding the x- and y-intercepts. $-x + 5y = 5$



8. Graph the linear equation. $x = -9$



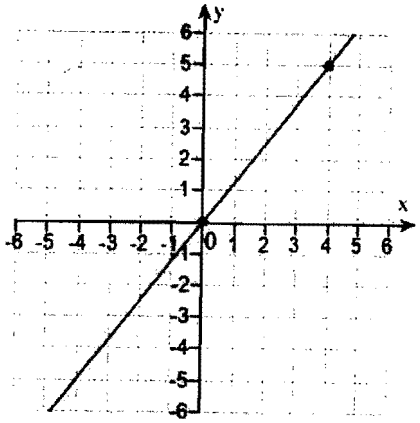
9. Graph the linear equation. $y = 6$



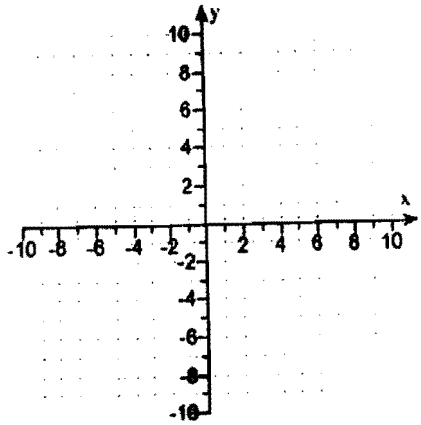
10. Find the slope of the line that goes through the given points. $(6, 4)$ and $(10, 9)$

11. Find the slope and y-intercept of the line. $2x - 2y = -20$

12. Use the points shown on the graph to the right to determine the slope of the line.



13. Graph the equation. $y = -7x + 2$



14. Find an equation of the line having the given slope and containing the given point.
$m = -5, \quad (6, 7)$

15. Find an equation of the line passing through the given points. $(4, 6)$ and $(5, 8)$

16. Solve. $\begin{cases} 6x - 4y = 56 \\ 2x + 6y = -40 \end{cases}$

17. Solve the system of equations. $\begin{cases} 2x - 9y = -34 \\ -7x + 5y = 13 \end{cases}$

18. Simplify the expression. $(-3x^7y^3)(2x^6y^6)$

19 Simplify and write using positive exponents only. $\dfrac{5a^{-4}b^6}{10a^2b^{-4}}$

20. Simplify. Write the answer using positive exponents only. $\left(\dfrac{4x^4}{y^9}\right)^3$

21. Simplify. Write the answer using positive exponents only. $\left(\frac{xy^{-5}}{z^{-5}}\right)^{-6}$

22. Multiply. $(3a + 2g)(3a - 2g)$

23. Multiply. $(5x^3 + 2)(9x^2 + 6x + 7)$

24. Factor the following polynomial by grouping. $6xy - 4x - 3y + 2$

25. Factor by grouping. $x^3 - x^2 - 3x + 3$

26. Factor. $2a^2 + 9a + 9$

27. Factor. $7x^2 - 13x - 2$

28. Factor. $216s^2 - 294$

29. Solve the equation. $12x^2 + 5x - 25 = 0$

30. Solve the equation. $x(5x + 11) = 12$

31. Simplify the rational expression. $\frac{2x^2 - 13x + 15}{2x^2 - 15x + 25}$

32. Multiply. $\frac{3x + 3}{2x + 8} \cdot \frac{x + 4}{3x^2 - 3}$

33. Divide and simplify. $\dfrac{x^2 - 8x + 16}{x^2 - 2x - 8} \div \dfrac{x^2 - 16}{3}$

34. Subtract fractions. Simplify the answer. $\dfrac{2}{17y^2} - \dfrac{1}{5y}$

35. Perform the indicated operation. $\dfrac{y + 7}{y^2 + 2y - 15} - \dfrac{4}{y^2 - 25}$

36. Simplify the complex fraction. $\dfrac{\dfrac{x^2 - y^2}{xy}}{\dfrac{1}{y} - \dfrac{1}{x}}$

37. Simplify the complex fraction. $\dfrac{\dfrac{2}{x} + 7}{\dfrac{4}{x^2} - 49}$

38. Divide. $\dfrac{30x^2y^2 + 5xy^2 - 15y^2}{5x^2y}$

39. Divide. $\left(2x^3 + 23x^2 + 32x + 20\right) \div \left(x + 10\right)$

40. Solve the equation. $\dfrac{x^2 + 3}{x} = \dfrac{28}{x}$

41. Solve the equation. $\dfrac{1}{x - 5} - \dfrac{5}{x^2 - 5x} = 3$

42. Simplify. $\sqrt{4x^4y^9}$

43. Add. $6\sqrt{5x^3} + 2x\sqrt{125x}$

44. Add or subtract. $3\sqrt{27} - 2\sqrt{18} + \sqrt{75}$

45. Multiply, and then simplify if possible. $\left(\sqrt{2} - \sqrt{5}\right)^2$

46. Rationalize the denominator. $\dfrac{7\sqrt{7}}{\sqrt{5}}$

47. Rationalize the denominator. $\dfrac{9}{2-\sqrt{7}}$

48. Solve. $\sqrt{x-3} = 25$

49. Solve. $\sqrt{4x-7} - 1 = 2$

50. Solve. $\sqrt{29-x} = x+1$

51. Use the quadratic formula to solve the equation. $x^2 - 5x = -5$

52. The sum of three consecutive integers is 111. Find the integers.

53. A rectangle has a length of 12 inches more than twice its height. If the perimeter of a rectangle is 330 inches, find its dimensions.

54. Find three consecutive odd integers such that the sum of the first integer, twice the second integer, and three times the third is 70.

55. Find how many quarts of 6% butterfat milk and 3% butterfat milk should be mixed to yield 45 quarts of 4% butterfat milk.

56. Two cyclists start at the same point and travel in opposite directions. One travels 3 mph faster than the other. In 2 hours they are 402 miles apart. How fast is each traveling?

57. The floor of a shed has an area of 117 square feet. The floor is in the shape of a rectangle whose length is 5 feet less than twice the width. Find the length and the width of the floor of the shed.

58. The sum of a number and 9 times its reciprocal is 10. Find the number(s).

59. One hose can fill a goldfish pond in 18 minutes, and two hoses can fill the same pond in 14 minutes. Find how long it takes the second hose alone to fill the pond.

60. Sally can paint a room in 9 hours while it takes Steve 3 hours to paint the same room. How long would it take them to paint the room if they worked together?

Intermediate Algebra /Final Exam Review Answers

1. $y = 17$

2. $x = -2.5$

3. $x = \frac{54}{13}$

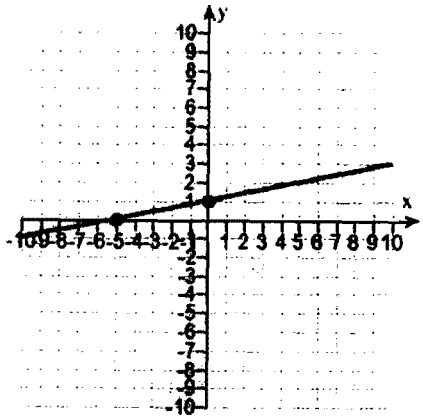
4. $x = -\frac{5}{7}$

5. $x \leq 6$

6. $x > -24$

7. x intercept $(-5, 0)$

   y intercept $(0, 1)$



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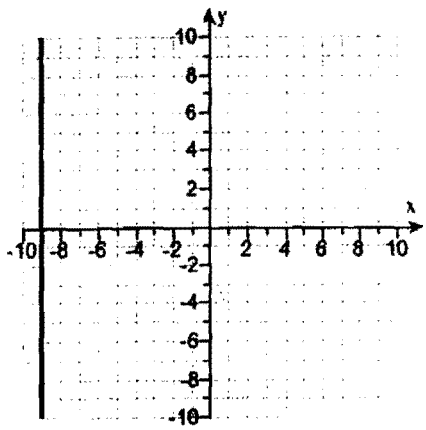
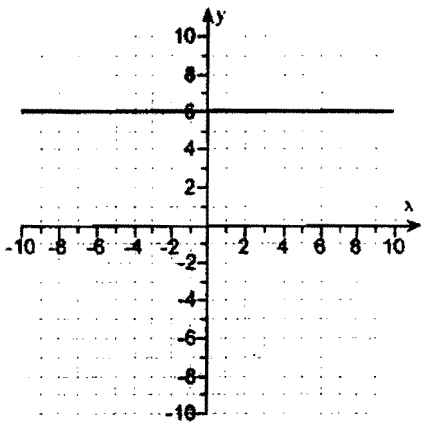
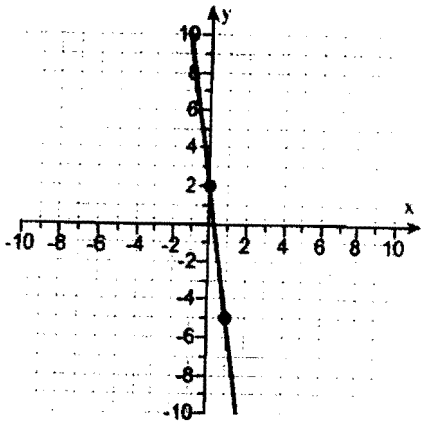


9. 

10. slope $= \frac{5}{4}$

11. slope 1
y-intercept (0, 10)

12. slope $= \frac{5}{4}$

13. 

14. $y = -5x + 37$

15. $y = 2x - 2$

16. $(4, -8)$

17. $(1, 4)$

18. $-6x^{13}y^{9}$

19. $\dfrac{b^{10}}{2a^{6}}$

20. $\dfrac{64x^{23}}{y^{27}}$

21. $\dfrac{y^{30}}{x^{6}z^{30}}$

22. $9a^{2} - 4g^{2}$

23. $45x^{5} + 30x^{4} + 35x^{3} + 18x^{2} + 12x + 14$

24. $(3y - 2)(2x - 1)$

25. $(x^{2} - 3)(x - 1)$

26. $(2a + 3)(a + 3)$

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

28. $6(6s + 7)(6s - 7)$

29. $x = \frac{5}{4}, -\frac{5}{3}$

30. $x = \frac{4}{5}, -3$

31. $\frac{2x - 3}{2x - 5}$

32. $\frac{1}{2(x-1)}$

33. $\frac{3}{(x+2)(x+4)}$

34. $\frac{10 - 17y}{85y^2}$

35. $\frac{y^2 - 2y - 23}{(y + 5)(y - 5)(y - 3)}$

36. $x + y$

37. $\frac{x}{2 - 7x}$

38. $6y + \frac{y}{x} - \frac{3y}{x^2}$

39. $2x^2 + 3x + 2$

40. $x = -5, 5$

41. $x = \frac{1}{3}$

42. $2x^2y^4\sqrt{y}$

43. $16x\sqrt{5x}$

44. $14\sqrt{3} - 6\sqrt{2}$

45. $7 - 2\sqrt{10}$

46. $\frac{7\sqrt{35}}{5}$

47. $-3\left(2 + \sqrt{7}\right)$

48. $x = 628$

49. $x = 4$

50. $x = 4$

51. $x = \frac{5 \pm \sqrt{5}}{2}$

52. 36, 37, 38

53. 114
51

54. 9, 11, 13

55. 15 of 6%
30 of 3%

56. 99 mph
102 mph

57. 9 width
13 length

58. 9, 1

59. 63 min

60. 2.25 hr.