

## Review for Final Exam – Basic Algebra

Work the problems out first and then check your [Answers](#).

Simplify:

1.  $-82 + (-43)$

2.  $18 + (-9) + 5 + (-2)$

3.  $60 + 30 + (-2)^3$

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

5.  $3(4-7) + (-2) - 5$

6.  $\frac{24}{10 + (-4)}$

7.  $|12 - 19| \div 7$

8.  $12 - [7 - (3 - 6)] + (2 - 3)^3$

9.  $\frac{88}{-8 - 3}$

10. Translate the following expression into symbols: six more than five times a number

11. Translate the following expression into symbols: seven less than six times a number

12. Insert  $<$ ,  $>$ , or  $=$  in the blank to make the following statement true:  $3.6$  \_\_\_\_  $3.56$

13. Insert  $<$ ,  $>$ , or  $=$  in the blank to make the following statement true:  $-7.43$  \_\_\_\_  $-8.5$

14. Evaluate:  $-2x + 3y^2$  when  $x = 2$  and  $y = -3$

15. Evaluate:  $4xy - 3x^2y$  when  $x = -1$  and  $y = -4$

16. Solve:  $6x = -36$

17. Solve:  $-4y = 84$

18. Solve:  $\frac{2}{3}y - 6 = 2$

19. Solve:  $\frac{1}{2}x + 2x + \frac{2}{3} = -x$

20. Solve:  $0.2(x + 5) + 3.4x = 0.3(4 - x)$

21. Solve:  $1.2(x - 3.1) - 0.3 = 2.1(3 - x)$

22. Harry received a 4% raise for doing a great job at work. His salary this year is \$25,750. What was his salary last year?

23. A board has a length of 35 feet. We cut the board into two pieces. One piece is 3 feet longer than  $3x$  the short piece. How long is each part of the board?

24. Solve:  $3x - 2 \geq 5(x + 2)$

25. Solve:  $x + 5 \leq 2(x + 6)$

26. Graph the line  $y = 2x + 6$

27. Graph the line  $y = -2$

28. Graph the line  $3x - y = 6$

29. Graph the line  $x = 4$

30. Graph the line  $y = -\frac{3}{4}x + 3$

31. Find the slope of the line that contains the points  $(-1, 2)$  and  $(4, -5)$ .

32. Find the slope of the line that contains the points  $(-3, -3)$  and  $(-6, -5)$ .

33. Find the equation of the line with slope of  $-2$  that contains the point  $(4, -5)$ .

34. Find the equation of the line with slope of  $-1/2$  that contains the point  $(3, -5)$ .

35. Find  $f(-2)$  if  $f(x) = x^3 - 2x$

36. Find  $f(3)$  if  $f(x) = -x^2 + 3$

37. Simplify:  $(-2x^2y)(5x^3y)$

38. Simplify:  $(5xy^2z)(2x^4yz^2)$

39. Simplify:  $\left(\frac{3x^{-2}yz^{-3}}{x^3y^2z}\right)^{-2}$

40. Simplify:  $\frac{3x^4y^3}{18x^2y^7}$

41. Simplify:  $\frac{25x^{-3}y^{-2}}{75x^{-4}y}$

42. Simplify:  $4x^2 + 2x - 16 - (-x^2 + 4x - 8)$

43. Simplify:  $(-2x^2 - 4x + 25) + (4x^2 + 2x - 12)$

44. Multiply and simplify:  $(3x - 6)(2x + 7)$

45. Multiply and simplify:  $(x - 3)(4x + 21)$

46. Divide and simplify:  $\frac{12x^3y^3 - 18xy + 6y}{3xy}$

47. Divide and simplify:  $\frac{x^2 + 7x + 12}{x + 3}$

48. Divide and simplify:  $\frac{20x^3 - 30x^2 + 5x + 5}{5}$

49. Factor completely:  $x^2 + 7x + 6$

50. Factor completely:  $x^2 - 3x - 18$

51. Factor completely:  $x^2 + 5x + 2$

52. Factor completely:  $3x^3 - 12x^2 - 36x$

53. Factor completely:  $3x^2 + 9x - 30$

54. Factor completely:  $x^2 - 36$

55. Solve the equation:  $(x - 3)(x + 9) = 0$

56. Solve the equation:  $t^2 - 2t - 15 = 0$

57. Simplify:  $\frac{2x + 6}{x^2 + 3x}$

58. Simplify:  $\frac{x^3 - 4x}{x^2 + 3x + 2}$

59. Divide and simplify:  $\frac{x^2 - 5x - 24}{x^2 - x - 12} \div \frac{x^2 - 10x + 16}{x^2 + x - 6}$

60. Multiply and simplify:  $\frac{x^2 + x - 42}{x - 3} \cdot \frac{(x - 3)^2}{x + 7}$

61. Simplify:  $\sqrt{x^7}$

62. Simplify:  $\sqrt{40y^{10}}$

63. Simplify:  $\sqrt{\frac{24y^3}{4x^6}}$

## Answers to Basic Algebra Review for Final

1. -125

2. 12

3. 82

4. -8

5. -16

6. 4

7. 1

8. 1

9. -8

10.  $5x + 6$

11.  $6x - 7$

12.  $>$

13.  $>$

14. 23

15. 28

16.  $x = -6$

17.  $y = -21$

18.  $y = 12$

19.  $x = -4/21$

20.  $x = 2/39$

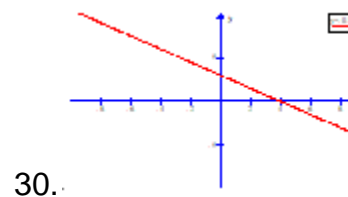
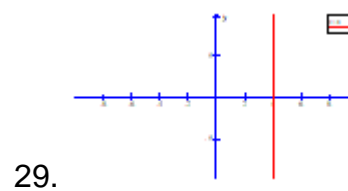
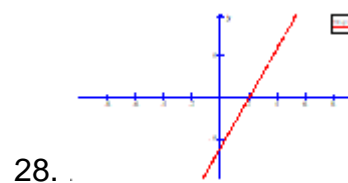
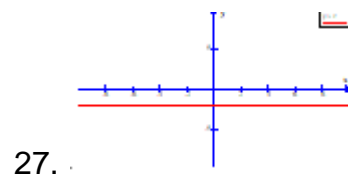
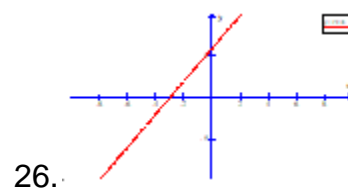
21.  $x = 3.\overline{127}$

22. \$24,760

23. 8 ft., 27 ft.

24.  $x \leq -6$

25.  $x \geq -7$



31.  $-7/5$

32.  $2/3$

33.  $y = -2x + 3$

34.  $y = -1/2x - 7/2$

35.  $-4$

36.  $-6$

37.  $-10x^5y^2$

38.  $10x^5y^3z^3$

39.  $\frac{x^{10}y^2z^8}{9}$

40.  $\frac{x^2}{6y^4}$

41.  $\frac{x}{3y^3}$

42.  $5x^2 - 2x - 8$

43.  $2x^2 - 2x + 13$

44.  $6x^2 + 9x - 42$

45.  $4x^2 + 9x - 63$

46.  $4x^2y^2 - 6 + \frac{2}{x}$

47.  $x + 4$

48.  $4x^3 - 6x^2 + x + 1$

49.  $(x + 6)(x + 1)$

50.  $(x - 6)(x + 3)$

51. Prime

52.  $3x(x - 6)(x + 2)$

53.  $3(x + 5)(x - 2)$

54.  $(x - 6)(x + 6)$

55.  $x = -9, 3$

56.  $t = -3, 5$

57.  $2/x$

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

59.  $\frac{x+3}{x-4}$

60.  $(x - 6)(x - 3)$

61.  $x^3\sqrt{x}$

62.  $2y^5\sqrt{10}$

63.  $\frac{y\sqrt{6y}}{x^3}$