

Ch. 1.1-1.5 Review

1. An expression is given. Evaluate it at the given value

$$-x^4 + x^3 + 8x, \quad x = -1$$

- a. -10 b. 9 c. 9 d. 10 e. -12

2. Simplify the expression. $\frac{x-2}{x^2-4}$

- a. $x+2$ b. $\frac{1}{x+2}$ c. $\frac{1}{x-2}$

- d. $\frac{1}{x+4}$ e. $\frac{1}{x-4}$

3. Simplify the expression. $\frac{x^3+7x^2+10x}{x^2+8x+15}$

- a. $\frac{x+2}{x+3}$ b. $\frac{x(x+2)}{x+3}$ c. $\frac{x+2}{x(x+3)}$

- d. $x(x+2)$ e. $\frac{x(x+3)}{x+2}$

4. Simplify the expression. $\frac{2y^2-5y-7}{4y^2-49} \div \frac{y^2-6y-7}{2y^2-7y-49}$

- a. 1 b. $\frac{1}{y-1}$ c. $\frac{1}{2y-7}$

- d. $\frac{1}{y-7}$ e. $2y-1$

5. Simplify the expression. $\frac{x}{x^2-6x-27} - \frac{4}{x+3} - \frac{6}{x-9}$

- a. $\frac{18+9x}{(x-3)(x+9)}$ b. $\frac{18-9x^2}{(x+3)(x-9)}$

- c. $\frac{18-9x}{(x+3)(x-9)}$ d. $\frac{18-9x}{(x-3)(x+9)}$

- e. $\frac{18-9x}{x-9}$

6. Simplify the expression. $\frac{1}{x+3} - \frac{1}{(x+3)^2} + \frac{9}{x^2-9}$

- a. $\frac{x^2+8x+21}{(x+3)^2(x-3)^2}$ b. $\frac{x^2+8x+21}{(x+3)^2+(x-3)}$

- c. $\frac{x^2+8x+21}{(x+3)^2(x-3)}$ d. $\frac{x^2+8x+21}{(x+3)(x-3)^2}$

- e. $\frac{x^2-8x-21}{(x+3)^2(x-3)}$

7. Factor: $7x^2-7x-42$

8. Factor: $-x^2-4x+77$

9. Factor: $7x^2+31x-20$

10. Simplify the expression. $\frac{n^{-1}+m^{-1}}{(n+m)^{-7}}$

- a. $\frac{(n-m)^8}{n+m}$ b. $\frac{(n+m)^8}{n+m}$ c. $\frac{(n+m)^7}{nm}$

- d. $\frac{(nm)^8}{n+m}$ e. $\frac{(n+m)^8}{nm}$

11. Simplify the expression. $\sqrt{1+\left(\frac{x}{\sqrt{9-x^2}}\right)^2}$

- a. $\frac{3}{9-x^2}$ b. $\frac{3}{\sqrt[3]{9-x^2}}$ c. $\frac{3}{\sqrt[4]{9-x^2}}$

- d. $\frac{3}{\sqrt{9-x^2}}$ e. $\frac{1}{9-x^2}$

12. Determine whether the given value is a solution of the equation.

$$\frac{1}{x} - \frac{1}{x-8} = \frac{1}{2}, \quad x = 4$$

- a. yes b. no

13. Solve the equation. $-4w+32=-8w$

- a. 8 b. 32 c. 9 d. -8 e. -9

15. Solve the equation. $\frac{z}{9} = \frac{6}{63}z + 7$

- a. -49 b. 7 c. 6 d. 63 e. 441

16. Solve the equation. $x - \frac{1}{12}x - \frac{1}{2}x - \frac{80}{24} = 0$

- a. 8 b. 6 c. -6 d. -8 e. 9

17. Solve the equation. $\frac{4}{x-6} + \frac{12}{x+6} = \frac{144}{x^2-36}$

- a. 6 b. 4 c. -6 d. 36 e. 12

18. Solve the equation. $(t-5)^2 = (t+5)^2 + 160$

- a. -5 b. 5 c. -8 d. 8 e. -32

19. Find all real solutions of the equation. $2x^2+7x-4=0$

- a. none of these b. $x = -\frac{1}{2}, x = 4$

- c. $x = \frac{3}{2}, x = -1$ d. $x = \frac{1}{2}, x = -4$

- e. $x = -\frac{1}{2}, x = -4$

20. Find all real solutions of the equation. $\sqrt{4x+16}+4=x$

- a. 4, 0 b. 0 c. -12 d. 0, 12 e. 12

21. Find all real solutions of the equation. $\sqrt{\sqrt{x+2}+x}=2$

- a. $x=6$ b. $x=-7, x=2$ c. $x=7, x=2$

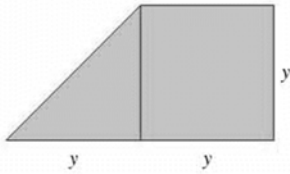
- d. $x=-14, x=-5$ e. $x=2$

22. Perform the addition and simplify. $\frac{1}{x+5} + \frac{1}{x^2-25}$

23. Perform the subtraction and simplify.

$$\frac{x}{x^2-x-20} - \frac{1}{x+4} - \frac{3}{x-5}$$

24. Find the length y in the figure, if the shaded area is 96 in^2 .



25. Perform the multiplication and simplify.

$$\frac{x^2 - 3x - 40}{x^2 - 25} \cdot \frac{5 + x}{8 - x}$$

26. Perform the addition and simplify. $\frac{1}{x+5} + \frac{1}{x^2 - 25}$

27. Perform the subtraction and simplify.

$$\frac{x}{x^2 - x - 20} - \frac{1}{x+4} - \frac{3}{x-5}$$

28. Determine whether the given value is a solution of the equation.

$$\frac{x^{5/2}}{x-6} = x - 20$$

(a) $x = 8$

(b) $x = 4$

29. The given equation is either linear or equivalent to a linear equation. Solve the equation. $4t - 10 = 18 - 4t$

30. Solve the equation by factoring. $2y^2 + 5y + 2 = 0$

31. Solve the equation by completing the square.

$$x^2 = \frac{3}{5}x - \frac{2}{25}$$

32. Find all real solutions of the equation. $|3x| = 7$

33. Simplify $(5ab)^4$

34. Simplify $\left(\frac{20t^3}{10s^4}\right)^2$

35. Simplify: $(6x^7 - 8x^6 - 12) - (3x^7 + 6x^6 + 2)$

36. Simplify:

$$(1.3x^3 + 7.2x^2 + 4.8) + (6.3x - 2.6) - (3.1x^2 - x - 9.4)$$

37. Multiply: $(2y - 1)(3y + 10)$

38. Multiply: $(x - 5)(x^2 + 5x + 25)$

39. Factor: $120m^9 - 24m^7 + 60m^2$

40. Factor: $x(y + 11) + 9(y + 11)$

41. Factor: $10y^2 - 23y + 12$

42. Factor: $x^4 - 625$

43. Factor: $x^2 - \frac{1}{16}$

44. 29. Multiply: $5y^2(5y^2 + 2y - 3)$

45. Simplify each radical and combine if possible:

$$2\sqrt{8} - 4\sqrt{72}$$

46. Simplify each radical and combine if possible:

$$\sqrt{20} + \sqrt{405}$$

47. Simplify each radical and combine if possible:

$$\sqrt{75xy^6} \cdot \sqrt{3x^2y^6}$$

48. Rationalize and simplify: $\frac{3}{\sqrt{2}}$

49. Rationalize and simplify: $\sqrt{\frac{10}{x}}$

50. Simplify: $125^{2/3}$

51. Simplify: $\left(\frac{8}{27}\right)^{2/3}$

52. Simplify: $9^{-3/2}$

53. Perform the multiplication and simplify.

$$\frac{x^2 - 3x - 40}{x^2 - 25} \cdot \frac{5 + x}{8 - x}$$

Answer Section

1. A
2. B
3. B
4. A
5. C
6. C

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

8. $-(x+11)(x-7)$

9. $(7x-4)(x+5)$

10. E
11. D
12. A
13. D
15. E
16. A
17. E
18. C
19. D
20. E
21. E

22. $\frac{x-4}{(x-5)(x+5)}$

23. $\frac{-3x-7}{(x-5)(x+4)}$

24. 8 in.

25. $\frac{5+x}{5-x}$

26. $\frac{x-4}{(x-5)(x+5)}$

27. $\frac{-3x-7}{(x-5)(x+4)}$

28. $x = 8$ is not a solution; $x = 4$ is a solution

29. $t = \frac{7}{2}$

30. $y = -2, y = -\frac{1}{2}$

31. $x = \frac{2}{5}, x = \frac{1}{5}$

32. $x = -\frac{7}{3}, x = \frac{7}{3}$

33. $625a^4b^4$

34. $\frac{4t^6}{s^8}$

35. $3x^7 - 14x^6 - 14$

36. $1.3x^3 + 4.1x^2 + 7.3x + 11.6$

37. $6y^2 + 17y - 10$

38. $x^3 - 125$

39. $12m^2(10m^7 - 2m^5 + 5)$

40. $(y+11)(x+9)$

41. $(2y-3)(5y-4)$

42. $(x^2 + 25)(x-5)(x+5)$

43. $\left(x - \frac{1}{4}\right)\left(x + \frac{1}{4}\right)$

44. $25y^4 + 10y^3 - 15y^2$

45. $-20\sqrt{2}$

46. $11\sqrt{5}$

47. $15xy^6\sqrt{x}$

48. $\frac{3\sqrt{2}}{2}$

49. $\frac{\sqrt{10x}}{x}$

50. 25

51. $\frac{4}{9}$

52. $\frac{1}{27}$

53. $\frac{5+x}{5-x}$