

P8: Solving Basic Equations

1. The equation $\frac{7x-12}{x^2-3x} - \frac{2}{x} = \frac{3}{x-3}$ has

A) no real solution.

B) one positive odd integer solution only.

C) one negative odd integer solution only.

D) one positive even integer solution only.

E) one negative even integer solution only.

2. The sum of all the real solutions of the equation $2(y - 4)^{\frac{2}{3}} = 8$ is

A) 8

B) 12

C) 16

D) 0

E) -4

3. If $x = A$ is the solution of the equation $\frac{2x}{3} + \frac{1}{2}(x - 3) = \frac{x+1}{4}$, then $11A + 2 =$

A) 23

B) 27

C) 25

D) 24

E) 26

4. If $x = \frac{21}{11}$ is a solution of the equation $\frac{N}{3}x + \frac{1}{2}(x - 3) = \frac{1}{4}(x + 1)$, then N is equal to:

A) 2

B) 3

C) $-\frac{1}{2}$

D) $-\frac{1}{3}$

E) 4

5. If $x = (5x - 2)(2y - 1)$, then $x =$

A) $\frac{1-2y}{3-5y}$

B) $\frac{1-2y}{3+5y}$

C) $\frac{1+2y}{3-5y}$

D) $\frac{1+2y}{3+5y}$

E) $-\frac{1+2y}{3+5y}$

6. If $\frac{1}{2}$ is a solution of the equation $3x - \frac{kx}{2} = \frac{x+1}{3} - \frac{1}{4}$, then $k =$

A) 5

B) 6

C) $\frac{17}{3}$

D) $-\frac{17}{3}$

E) -4

7. The sum of the solution set of the equation $(x + 1)^{\frac{2}{3}} = 4$ is

A) -2

B) -9

C) 7

D) -7

E) 3

8. If $\frac{1}{w} = \frac{1}{x} + \frac{1}{y}$, then $x =$

A) $\frac{wy}{y-w}$

B) $\frac{wy}{w-y}$

C) $w - y$

D) $y - w$

E) $\frac{w-y}{wy}$

9. The sum of all the solutions of the equation $\frac{x-1}{x-2} - \frac{1}{x} + 1 = \frac{2x}{x-2}$ is

A) $\frac{1}{2}$

B) $-\frac{1}{2}$

C) 1

D) -1

E) $\frac{3}{2}$

10. The length of a rectangle is 3 feet more than twice the width. If the perimeter of the rectangle is 60 feet, then the length of the rectangle is:

A) 21

B) 25

C) 19

D) 17

E) 23

11. If the difference between 5 times a number and 7 is equal to the sum of the number and 3, then the number is

A) $\frac{5}{2}$

B) $\frac{5}{3}$

C) -3

D) - 8

E) - 1

12. In the adjacent figure, the area of the big rectangle is 24 cm^2 . The area of the shaded region is

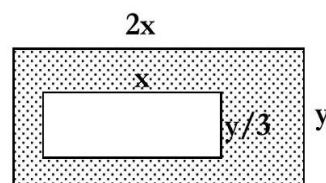
A) 20 cm^2

B) 10 cm^2

C) 6 cm^2

D) 15 cm^2

E) 16 cm^2



13. A puzzle piece in the shape of triangle has perimeter 40 cm. If two sides of the triangle are each twice as long as the shortest side, then the length of the side is equal to

A) 8 cm

B) 5 cm

C) 10 cm

D) 12 cm

E) 13 cm

14. If $t = \frac{-ax}{a-x-t}$, $a \neq t$, then the value of $3x + 1$ is equal to

A) $-3t + 1$

B) $t + 3a$

C) $3t - 1$

D) $t - 3a$

E) $3at + 1$

15. If $\frac{1}{y} = \frac{1}{m} + \frac{1}{x} + \frac{1}{t}$, then $x =$

A) $\frac{mty}{mt-ty-my}$

B) $\frac{mty}{mt+ty-my}$

C) $-\frac{mt+ty-my}{mty}$

D) $-\frac{mt-ty-my}{mty}$

E) $y - m - t$

16. If $x = -4$ is a solution of the equation $\frac{2x+4}{3} + \frac{x}{2} = \frac{1}{4}x - \frac{a}{3}$, then a is

A) 7

B) $-1/7$

C) 15

D) $1/7$

E) -15

17. The solution set of $\frac{3}{4}x - \frac{1}{2}x - 5 = \frac{1}{6}x + \frac{2}{3} - 2$, contains

- A) only one positive integer
- B) no real number
- C) only one non-integer rational number
- D) only one negative integer
- E) infinitely many real numbers

18. If $y - b = m(x - a)$, then x is equal to

- A) $\frac{y-b+ma}{m}$
- B) $my - ba + a$
- C) $\frac{y-b+a}{m}$
- D) $y - b + ma$
- E) $\frac{m+ay-ab}{y-b}$

19. If $(a + c)x + x^2 = (x + a)^2$, then $x =$

A) $\frac{a^2}{c-a}$

B) $\frac{a^2}{3a+c}$

C) $\frac{a^2}{a+c}$

D) $\frac{a^2+2a}{a+c}$

E) $\frac{a^2}{3c-a}$

20. Which one of the following equations is NOT an Identity?

A) $\frac{x+2}{x+4} = \frac{1}{2}$

B) $6x - 5 = -3(1 - 2x) - 2$

C) $\frac{4}{4x^2+8} = \frac{-2}{-4-2x^2}$

D) $(x - 3)^2 = x^2 - 6x + 9$

E) $\frac{1}{3}x + 2 = \frac{x+6}{3}$

21. If the equation $18x - 12 = 3(kx - 4) - 6x$ is an identity then the value of k is

A) -8

B) 5

C) 0

D) -7

E) 8

22. If $x = -10$ is a solution of the equation $\frac{3x+6}{10} - \frac{1}{2}x = \frac{2}{k}x + \frac{33}{k}$, then $k =$

A) 5

B) -5

C) $-\frac{65}{37}$

23. If the equation $-3(x + 2) + 5(x + k) = 2x - 4$ is an identity, then k equals to

A) $\frac{2}{5}$

24. Solve the equation: $2x - \frac{x}{2} + \frac{x+1}{4} = 6x$

A) $x = \frac{1}{17}$

25. Solve the equation: $(x - 1)(x + 2) = (x - 2)(x - 3)$

A) $x = \frac{4}{3}$

26. Solve the equation: $\frac{3}{x+1} - \frac{1}{2} = \frac{1}{3x+3}$

A) $x = \frac{13}{3}$

27. Solve the equation: $\frac{1}{3-t} + \frac{4}{3+t} + \frac{15}{9-t^2} = 0$

A) $t = 10$

28. Solve the equation: $\frac{1}{x} - \frac{2}{2x+1} = \frac{1}{2x^2+x}$

A) all real numbers except 0 and $-\frac{1}{2}$

29.Solve the equation: $2x^{5/3} + 64 = 0$

A) -8

30.Solve the equation: $4(x + 2)^5 = 1$

A) $x = -2 + \sqrt[5]{\frac{1}{4}}$

31. Solve the equation: $x^4 + 64 = 0$

A) No real Solution

32. The solution set of the equation $\frac{3}{x+4} = \frac{1}{x} + \frac{6x+12}{x(x+4)}$ contains:

A) No Solution

B) One positive integer

C) One negative integer

D) Two irrational numbers

E) One positive and one negative rational number.

33. The solution set of $2 + \frac{5}{x-4} = \frac{x+1}{x-4}$ is:

A) \emptyset

B) $\{-4\}$

C) $\{0\}$

D) $\{4\}$

E) $\{2\}$

34. The product of all the solutions of the equation $6x^{\frac{2}{3}} - 24 = 0$ is:

A) -64

B) 64

C) -8

D) 24

E) -6

35. The solution of the linear equation $3x - \frac{5x}{2} = \frac{x+1}{3} - \frac{1}{6}$ is:

A) 1

B) 0

C) -1

D) $\frac{2}{3}$

E) $\frac{1}{3}$

36. The solution set of the equation $\frac{1}{2}x + 2 - \frac{1}{3}x = \frac{10}{3}$ consists of

A) one negative even integer

B) one non-integer rational number

C) one positive even integer.

37. The solution set of the equation $4x^{\frac{3}{4}} + 32 = 0$ contains:

A) no real solution.

38. If the difference between the squares of two consecutive natural numbers is 27 and x is the smallest number, then $2x - 1$ is equal to

A) 24

B) 28

C) 25

39. If $\frac{a}{(2a+5)} = (3b - 1)$, then $a =$

A) $\frac{5+15b}{6b+3}$

B) $\frac{5-15b}{6b+3}$

C) $\frac{5+15b}{6b-3}$

D) $\frac{15b-5}{6b-3}$

E) $\frac{5-15b}{6b-3}$

40. The sum of all the real solutions of the equation $3(x - 2)^{\frac{4}{3}} = 48$ is

A) 2

B) -4

C) 0

D) 4

41. If $x^2 - 2xy - 3y^2 = 4$ and $x^2 - y^2 = 6$, then $\frac{x-3y}{x-y} =$

- A) $\frac{1}{6}$
- B) 6
- C) 24
- D) $\frac{2}{3}$

42. If $x = -\frac{5}{9}$ is the solution of the equation $\frac{2}{x} - 4 = 5 + \frac{k}{x}$, then $k =$

- A) 7
- B) 2
- C) -2
- D) 8
- E) -3

43. If $x > 1$, then $\sqrt[5]{(-x)^5} + \sqrt[6]{(\sqrt{x} - x)^6} =$

A) $-\sqrt{x}$

B) $-2x$

C) $2x$

D) \sqrt{x}

E) 0