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1. Solve the quadratic equation  $x + 13 = -\frac{36}{x}$

- (i) (-3,-10) (ii) (-3,-9) (iii) (-1,-12) (iv) (-1,-10) (v) (-4,-9)

2. Find the discriminant of the quadratic equation  $x^2 = 0$

- (i) -3 (ii) -1 (iii) 1 (iv) 3 (v) 0

3. If  $ax^2 + bx + c$  is exactly divisible by  $(x+9)$ ,  $(x-8)$  and leaves a remainder of -66 when divided by  $(x+3)$ , find  $a, b$  and  $c$

- (i)  $a=1, b=1, c=-72$  (ii)  $a=1, b=4, c=-69$  (iii)  $a=1, b=0, c=-73$  (iv)  $a=1, b=-2, c=-74$  (v)  $a=1, b=2, c=-71$

4. Find the quadratic equation with roots  $(\frac{5}{2}, (\frac{-6}{7}))$

- (i)  $(14x^2 - 23x - 30) = 0$  (ii)  $(14x^2 - 9x - 18) = 0$  (iii)  $(14x^2 - 27x - 20) = 0$  (iv)  $(7x^2 - 29x - 30) = 0$  (v)  $(6x^2 - 11x - 10) = 0$

If  $p$  and  $q$  are the roots of  $(x^2 + 8x + 12) = 0$ ,

5. find the equation whose roots are  $p + \frac{1}{q}$  and  $q + \frac{1}{p}$

- (i)  $(12x^2 + 100x + 143) = 0$  (ii)  $(12x^2 + 104x + 169) = 0$  (iii)  $(12x^2 + 116x + 195) = 0$  (iv)  $(16x^2 + 138x + 221) = 0$  (v)  $(6x^2 + 55x + 91) = 0$

6. Solve :  $\frac{4}{(-x-1)} - \frac{3}{(-x+3)} = -5$

- (i)  $3\sqrt{3}, (-\sqrt{3})$  (ii)  $3, (-1)$  (iii)  $3\sqrt{4}, (-\sqrt{4})$  (iv)  $3\sqrt{2}, (-\sqrt{2})$  (v)  $3\sqrt{5}, (-\sqrt{5})$

7. Find the quadratic equation whose roots are  $(7 - 4\sqrt{7})$  and  $(7 + 4\sqrt{7})$

- (i)  $(x^2 - 17x - 63) = 0$  (ii)  $(-14x - 63) = 0$  (iii)  $(2x^2 - 14x - 63) = 0$  (iv)  $(x^2 - 14x - 63) = 0$  (v)  $(x^2 - 12x - 63) = 0$

8. The sum of the roots of the quadratic equation  $(x^2 + 8x + 16) = 0$  is

- (i) -6 (ii) -7 (iii) -8 (iv) -11 (v) -9

9. Solve:  $\frac{(25x+2)}{(18x+1)} = \frac{(4x+2)}{(3x+1)}$

- (i) (1, -3) (ii) (2, -1) (iii) (3, 0) (iv) (-3, 0) (v) (6, 2)

10. Find the roots of the quadratic equation  $(x^2 - 9x + 8) = 0$

- (i) (9, 1) (ii) (11, 0) (iii) (9, 0) (iv) (8, 1) (v) (11, -2)

11. If 9 is the root of  $(x^2 + kx - 18) = 0$ , find  $k$  and the other root

- (i)  $k = -9$ , and the other root = -4 (ii)  $k = -4$ , and the other root = 1 (iii)  $k = -8$ , and the other root = -3  
(iv)  $k = -6$ , and the other root = -1 (v)  $k = -7$ , and the other root = -2

12. Find the quadratic equation with roots  $(\frac{-4}{9}, \frac{-4}{9})$

- (i)  $(99x^2 + 80x + 16) = 0$  (ii)  $(81x^2 + 72x + 16) = 0$  (iii)  $(27x^2 + 30x + 8) = 0$  (iv)  $(63x^2 + 64x + 16) = 0$   
(v)  $(81x^2 + 54x + 8) = 0$

13. Solve:  $(x^4 - 10x^2 + 24) = 0$

- (i) 6, (-6), 1, (-3) (ii)  $\sqrt{3}, (-\sqrt{3}), 0, (-4)$  (iii)  $\sqrt{6}, (-\sqrt{6}), 2, (-2)$  (iv)  $\sqrt{8}, (-\sqrt{8}), 4, 1$   
(v)  $\frac{4}{\sqrt{6}}, (-\frac{4}{\sqrt{6}}), 3, (-1)$

14. Solve:  $10x^2 - 16 = 0$

- (i)  $\frac{(-4)}{\sqrt{40}}, \frac{4}{\sqrt{40}}$  (ii)  $\frac{(-4)}{\sqrt{10}}, \frac{4}{\sqrt{10}}$  (iii)  $\frac{(-4)}{\sqrt{10}}, \frac{4}{\sqrt{40}}$  (iv)  $\frac{(-4\sqrt{4})}{\sqrt{10}}, \frac{4}{\sqrt{10}}$  (v)  $\frac{(-4\sqrt{4})}{\sqrt{10}}, \frac{4\sqrt{4}}{\sqrt{10}}$

15. Find the quadratic equation, the sum of whose roots is -12 and product is 36

- (i)  $(x^2 + 9x + 36) = 0$  (ii)  $(x^2 + 12x + 36) = 0$  (iii)  $(2x^2 + 12x + 36) = 0$  (iv)  $(12x + 36) = 0$   
(v)  $(x^2 + 15x + 36) = 0$

16. Solve:  $81x^2 a^4 b^2 - 54xa^2b + 8 = 0$

- (i)  $\frac{4}{9a^2b}, \frac{2}{9a^2b}$  (ii)  $\frac{2}{3a^2b}, \frac{4}{9a^2b}$  (iii)  $\frac{2}{9a^2b}, 0$  (iv)  $\frac{4}{11a^2b}, \frac{2}{11a^2b}$  (v)  $\frac{4}{7a^2b}, \frac{2}{7a^2b}$

17. Find the roots of the quadratic equation  $(-9x^2 + 6x + 5) = 0$

(i)  $((1 - \frac{1}{3}\sqrt{6}), (-\frac{1}{3} + \frac{1}{3}\sqrt{6}))$  (ii)  $((\frac{1}{3} - \frac{1}{3}\sqrt{6}), (\frac{1}{3} + 2))$  (iii)  $((\frac{1}{3} - \frac{1}{3}\sqrt{6}), (\frac{1}{3} + \frac{1}{3}\sqrt{6}))$

(iv)  $((\frac{1}{3} - \frac{1}{3}\sqrt{6}), (\frac{1}{3} + \frac{1}{3}\sqrt{6}))$  (v)  $((1 - \frac{1}{3}\sqrt{6}), (\frac{1}{3} + 2))$

18. The product of the roots of the quadratic equation  $(-35x^2 - 16x + 3) = 0$  is

(i)  $(\frac{-1}{35})$  (ii)  $(\frac{-1}{7})$  (iii)  $(\frac{-3}{37})$  (iv)  $(\frac{-3}{35})$  (v)  $(\frac{-1}{11})$

19. Find the quadratic equation with roots  $(-6, -6)$

(i)  $(x^2 + 13x + 42) = 0$  (ii)  $(x^2 + 12x + 36) = 0$  (iii)  $(x^2 + 14x + 48) = 0$  (iv)  $(x^2 + 9x + 18) = 0$

(v)  $(x^2 + 11x + 30) = 0$

20. Solve :  $12x^2 + 11bx + 2b^2 = 0$

(i)  $-\frac{b}{3}, -2b$  (ii)  $-\frac{b}{4}, -\frac{2b}{3}$  (iii)  $-\frac{b}{5}, -\frac{2b}{5}$  (iv)  $0, 0$  (v)  $-\frac{b}{2}, -\frac{4b}{3}$

21. Solve :  $\frac{(x-6)}{(x-10)} + \frac{(x-8)}{(x-11)} = \frac{29}{6}$

(i)  $(\frac{158}{15}, 12)$  (ii)  $(\frac{176}{17}, 11)$  (iii)  $(\frac{198}{19}, 14)$  (iv)  $(\frac{180}{17}, 15)$  (v)  $(\frac{178}{17}, 13)$

22. Find the discriminant of the quadratic equation  $(x^2 + 6x + 8) = 0$

(i) 5 (ii) 3 (iii) 6 (iv) 4 (v) 1

23. Solve :  $\sqrt{(-2x^2 + 3x + 54)} = (x-1)$

(i)  $(\frac{5}{6} + \frac{1}{6}\sqrt{1983}), (\frac{5}{6} - \frac{1}{6}\sqrt{1983})$  (ii)  $(\frac{5}{6} + \frac{1}{6}\sqrt{661}), (\frac{5}{6} - \frac{1}{6}\sqrt{661})$  (iii)  $(\frac{5}{6}\sqrt{5} + \frac{1}{6}\sqrt{661}), (\frac{5}{6}\sqrt{5} - \frac{1}{6}\sqrt{661})$

(iv)  $(\frac{5}{6}\sqrt{4} + \frac{1}{6}\sqrt{661}), (\frac{5}{6}\sqrt{4} - \frac{1}{6}\sqrt{661})$  (v)  $(\frac{5}{6} + \frac{1}{6}\sqrt{1322}), (\frac{5}{6} - \frac{1}{6}\sqrt{1322})$

24. Solve :  $12x^2b^2 - 13a^2xb + 3a^4 = 0$

(i)  $\frac{3a^2}{2b}, \frac{a^2}{b}$  (ii)  $\frac{a^2}{2b}, \frac{a^2}{5b}$  (iii)  $\frac{5a^2}{4b}, \frac{a^2}{b}$  (iv)  $\frac{a^2}{4b}, \frac{a^2}{3b}$  (v)  $\frac{3a^2}{4b}, \frac{a^2}{3b}$

25. Solve :  $4x^2a^4 - b^2 = 0$

(i)  $-\frac{b}{3a^2}, \frac{3b}{8a^2}$  (ii)  $-\frac{b}{2a^2}, \frac{3b}{6a^2}$  (iii)  $-\frac{b}{a^2}, \frac{b}{6a^2}$  (iv)  $-\frac{b}{a^2}, \frac{3b}{4a^2}$  (v)  $0, \frac{5b}{6a^2}$

## Assignment Key

1) (v)	2) (v)	3) (i)	4) (i)	5) (ii)	6) (ii)
7) (iv)	8) (iii)	9) (iii)	10) (iv)	11) (v)	12) (ii)
13) (iii)	14) (ii)	15) (ii)	16) (i)	17) (iii)	18) (iv)
19) (ii)	20) (ii)	21) (v)	22) (iv)	23) (ii)	24) (v)
25) (ii)					