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# Quadratic equations questions for IBPS PO Pre IBPS clerk, SBI PO pre and SBI clerk

## QUADRATIC EQUATIONS QUIZ 14

Directions: In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answer.

(1). I.  $42x^2 + 13x + 1 = 0$

II.  $9y^2 - 53y - 6 = 0$

A. if  $x > y$                       B. if  $x \leq y$                       C. if  $x \geq y$                       D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

(2). I.  $9x^2 - 8x - 20 = 0$

II.  $20y^2 + 193y + 210 = 0$

A. if  $x > y$                       B. if  $x \leq y$                       C. if  $x \geq y$                       D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

(3). I.  $36x^2 - 196x - 11 = 0$

II.  $6y^2 - 12y - 378 = 0$

A. if  $x > y$                       B. if  $x \leq y$                       C. if  $x \geq y$                       D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

(4). I.  $13x^2 - 55x - 252 = 0$

II.  $148y^2 + 61y - 155 = 0$

A. if  $x > y$                       B. if  $x \leq y$                       C. if  $x \geq y$                       D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

(5). I.  $37x^2 - 49x - 186 = 0$

II.  $60y^2 - 326y - 22 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

(6). I.  $x^2 - 13x + 36 = 0$

II.  $\frac{42}{\sqrt{y}} + \frac{24}{\sqrt{y}} = 12\sqrt{y}$

A.  $x > y$

B.  $x < y$

C.  $x \geq y$

D.  $x \leq y$

E.  $x = y$  or relationship between  $x$  and  $y$  can't be established

(7). I.  $x^2 - 37\sqrt{2}x + 140 = 0$

II.  $5y^2 - 24y - 117 = 0$

A.  $x > y$

B.  $x < y$

C.  $x \geq y$

D.  $x \leq y$

E.  $x = y$  or relationship between  $x$  and  $y$  can't be established

(8). I.  $3x^2 + 10x - 25 = 0$

II.  $3y^2 - 14y + 16 = 0$

A.  $x > y$

B.  $x < y$

C.  $x \geq y$

D.  $x \leq y$

E.  $x = y$  or relationship between  $x$  and  $y$  can't be established

(9). I.  $3x^2 + 51x - 252 = 0$

II.  $4y^2 - (16 + \sqrt{10})y + 4\sqrt{10} = 0$

A.  $x > y$

B.  $x < y$

C.  $x \geq y$

D.  $x \leq y$

E.  $x = y$  or relationship between  $x$  and  $y$  can't be established

(10). I.  $7x^2 - 34x - 48 = 0$

II.  $3y^2 + 40y - 400 = 0$

A.  $x > y$

B.  $x < y$

C.  $x \leq y$

D.  $x \geq y$

E.  $X = y$  or relationship between  $x$  and  $y$  can't be established



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### Correct answers:

1	2	3	4	5	6	7	8	9	10
D	A	E	E	E	E	E	B	E	E

### Explanations:

1.

$$\text{I. } 42x^2 + 13x + 1 = 0$$

$$\Rightarrow 42x^2 + 7x + 6x + 1 = 0$$

$$\Rightarrow 7x(6x + 1) + 1(6x + 1) = 0$$

$$\Rightarrow (7x + 1)(6x + 1) = 0$$

$$\therefore x = \frac{-1}{6} \text{ or } \frac{-1}{7}$$

$$\text{II. } 9y^2 - 53y - 6 = 0$$

$$\Rightarrow 9y^2 + y - 54y - 6 = 0$$

$$\Rightarrow y(9y + 1) - 6(9y + 1) = 0$$

$$\Rightarrow (9y + 1)(y - 6) = 0$$

$$\therefore y = \frac{-1}{9} \text{ or } y = 6$$

So, we can observe that  $x < y$  in all cases.

Hence, option D is correct.

**2.**

I.  $9x^2 - 8x - 20 = 0$

$$\Rightarrow 9x^2 - 18x + 10x - 20 = 0$$

$$\Rightarrow 9x(x - 2) + 10(x - 2) = 0$$

$$\Rightarrow (9x + 10)(x - 2) = 0$$

$$\therefore x = \frac{-10}{9} \text{ or } x = 2$$

II.  $20y^2 + 193y + 210 = 0$

$$\Rightarrow 20y^2 + 25y + 168y + 210 = 0$$

$$\Rightarrow 5y(4y + 5) + 42(4y + 5) = 0$$

$$\Rightarrow (5y + 42)(4y + 5) = 0$$

$$\therefore y = \frac{-42}{5} \text{ or } y = \frac{-5}{4}$$

So, we can observe that  $x > y$  in all cases.

Hence, option A is correct.

**3.**

I.  $36x^2 - 196x - 11 = 0$

$$\Rightarrow 36x^2 + 2x - 198x - 11 = 0$$

$$\Rightarrow (2x - 11)(18x + 1) = 0$$

$$\Rightarrow (2x - 11)(18x + 1) = 0$$

$$\Rightarrow x = \frac{11}{2}, -\frac{1}{18}$$

$$\text{II. } 6y^2 - 12y - 378 = 0$$

$$\Rightarrow (6y + 42)(y - 9) = 0$$

$$\Rightarrow y = -7, 9$$

Hence, relationship between x and y cannot be determined.

Hence, option E is correct.

**4.**

$$\text{I. } 13x^2 - 55x - 252 = 0$$

$$\Rightarrow 13x^2 - 91x + 36x - 252 = 0$$

$$\Rightarrow 13x(x - 7) + 36(x - 7) = 0$$

$$\Rightarrow (13x + 36)(x - 7) = 0$$

$$\Rightarrow x = -\frac{36}{13}, 7$$

$$\text{II. } 148y^2 + 61y - 155 = 0$$

$$\Rightarrow 37y^2 + 185y^2 - 31y + 155 = 0$$

$$\Rightarrow 37y(y + 5) - 31(y + 5) = 0$$

$$\Rightarrow (37y - 31)(y + 5) = 0$$

$$\Rightarrow y = \frac{31}{37}, -5$$

Hence, relationship between x and y cannot be determined.

Hence, option E is correct.

**5.**

I.  $37x^2 - 49x - 186 = 0$

$$\Rightarrow 37x^2 - 111x + 62x - 186 = 0$$

$$\Rightarrow 37x(x - 3) + 62(x - 3) = 0$$

$$\Rightarrow (37x + 62)(x - 3) = 0$$

$$\Rightarrow x = -\frac{62}{37}, 3$$

II.  $60y^2 - 326y - 22 = 0$

$$\Rightarrow 60y^2 - 330y + 4y - 22 = 0$$

$$\Rightarrow 30y^2 - 165y + 2y - 11 = 0$$

$$\Rightarrow 15y(2y - 11) + 1(2y - 11) = 0$$

$$\Rightarrow (2y - 11)(15y + 1) = 0$$

$$\Rightarrow y = \frac{11}{2}, -\frac{1}{15}$$

Hence, relationship between x and y cannot be determined.

Hence, option E is correct.

**6.**

I.  $x^2 - 13x + 36 = 0$

or,  $x^2 - 9x - 4x + 36 = 0$



$$x(x - 9) - 4(x - 9) = 0$$

$$(x - 4)(x - 9)$$

$$x = 4, 9 \text{ II.}$$

$$\frac{42}{\sqrt{y}} + \frac{24}{\sqrt{y}} = 11\sqrt{y}$$

$$\text{or, } \frac{42 + 24}{\sqrt{y}} = 12\sqrt{y}$$

$$\frac{66}{\sqrt{y}} = 12\sqrt{y}$$

$$y = \frac{66}{12}$$

While comparing the root values of  $x$  and  $y$ , we find that root value of  $y$  lies between the root values of  $x$ . Therefore relationship between  $x$  and  $y$  can't be established

Hence, option E is correct.

**7.**

$$\text{I. } x^2 - 37\sqrt{2}x + 140 = 0$$

$$\Rightarrow x^2 - 35\sqrt{2}x - 2\sqrt{2}x + 140 = 0$$

$$\Rightarrow x(x - 35\sqrt{2}) - 2\sqrt{2}(x - 35\sqrt{2}) = 0$$

$$\Rightarrow (x - 2\sqrt{2})(x - 35\sqrt{2}) = 0$$

$$\Rightarrow x = +35\sqrt{2} \text{ or } +2\sqrt{2}$$

$$\text{II. } 5y^2 - 24y - 117 = 0$$

$$\Rightarrow 5y^2 + 15y - 39y - 117 = 0$$

$$\Rightarrow 5y(y + 3) - 39(y + 3) = 0$$

$$\Rightarrow (5y - 39)(y + 3) = 0$$

$$\Rightarrow y = 39/5, -3$$

While comparing the root values of x and y, we find that one root value of y lies between the root values of x. Therefore, the relation between x and y can't be determined. Hence, option E is correct.

**8.**

I.  $3x^2 + 10x - 25 = 0$

or,  $3x^2 + 15x - 5x - 25 = 0$

or,  $3x(x + 5) - 5(x + 5) = 0$

or,  $(x + 5)(3x - 5) = 0$

or,  $x = -5$  or  $x = 5/3$

II.  $3y^2 - 14y + 16 = 0$

or,  $3y^2 - 6y - 8y + 16 = 0$

or,  $3y(y - 2) - 8(y - 2) = 0$  or,  $(3y - 8)(y - 2) = 0$

or,  $y = 8/3$  or  $y = 2$

While comparing the root values of x and y, we find that root values of x is less than root values of y.

Hence, option B is correct.

**9.**

$$\text{I. } 3x^2 + 51x - 252 = 0$$

$$\text{or, } x^2 + 17x - 84 = 0$$

$$\text{or, } x^2 + 21x - 4x - 84 = 0$$

$$\text{or, } x(x + 21) - 4(x + 21) = 0$$

$$\text{or, } (x + 21)(x - 4) = 0$$

$$x = -21, 4$$

$$\text{II. } 4y^2 - (16 + 10)y + 410 = 0$$

$$\text{or, } 4y^2 - 16y - 10y + 410 = 0$$

$$4y(y - 4) - 10(y - 4) = 0$$

$$(y - 4)(4y - 10)$$

$$y = 4, \frac{10}{4}$$

While comparing the root values of  $x$  and  $y$ , we find that one root value of  $y$  is equal to  $x$ , one root of  $y$  is greater than  $x$  and one root of  $y$  is smaller than  $x$ . Therefore, the relation between  $x$  and  $y$  can't be determined

Hence, option E is correct.

**10.**

$$\text{(I). } 7x^2 - 34x - 48 = 0$$

$$\text{or, } 7x^2 - 42x + 8x - 48 = 0$$

$$7x(x - 6) + 8(x - 6) = 0$$

$$(7x + 8)(x - 6)$$

$$x = -\frac{8}{7}, 6$$

$$(II). 3y^2 + 40y - 400 = 0$$

$$\text{Or, } 3y^2 + 60y - 20y - 400 = 0$$

$$3y(y + 20) - 20(y + 20) = 0$$

$$(y + 20)(3y - 20)$$

$$y = -20, \frac{20}{3}$$

While comparing the root values of x and y, we find that both values of x lies between y's values. Therefore, relationship between x and y can't be established

Hence, option E is correct.



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