Target RBI Grade B 2023
Top 150 Questions
Quant
Lecture 1 – Quadratic Equation

www.edutap.co.in hello@edutap.co.in +91 8146207241

Quadratic Equation

EduTap

Linear Equation
$ax+by+c=0$
Power ①
$2x+3y+5=0$

$ax^2+bx+c=0$ $\quad a \neq 0$
Power ②

$x^2-7x+12=0$
$a=1 \quad b=-7 \quad c=12$

$$\text{Root1} = \frac{-b \pm \sqrt{b^2-4ac}}{2a} =$$

$$\frac{-(-7) \pm \sqrt{(-7)^2-4\times1\times(+12)}}{2\times1}$$

$$= \frac{7 \pm \sqrt{49-48}}{2} = \frac{7 \pm 1}{2} = \frac{7+1}{2}, \frac{7-1}{2} \Rightarrow 4, 3$$

Q1.

I. $x^2 + 17x + 72 = 0$

II. $6y^2 - 53y + 60 = 0$

[1] x > y

[2] x ≤ y

[3] x ≥ y

[4] x < y

[5] x = y or relationship between x and y can't be established

B C
+ + (−, −)
− + (+, +)

$\boxed{x < y}$

$x^2 + 17x + 72 = 0$

odd

100, 100+ 2

$\alpha + \beta = 17$

$8 + 9$

$\alpha\beta = 72$

8×9

$x = -8, -9$

2 | 72
2 | 36
2 | 18
9

99%

$(x+8)(x+9) = 0$

$6y^2 - 53y + 60 = 0$

$\alpha + \beta = -53$

$\alpha\beta = 6 \times 60 = 360$

$-8, -45$

2 | 360
2 | 180
2 | 90
45

$y = \frac{8}{6}, \frac{45}{6}$

$= \frac{4}{3}, \frac{15}{2}$

www.edutap.co.in hello@edutap.co.in +91 8146207241

Quadratic Equation

EduTap

$ax^2+bx+c=0$

B	C		Roots	
+	+	=	-	-
-	+	=	+	+

* *

$X^2+11x+30=0$

$a=1 \quad b=11 \quad c=30$

α, β

$\alpha\beta = 1\times30 = 30$

$\alpha+\beta = 11$

$5, 6$

$-5, -6$

$x<y$

$Y^2-12y+35=0$

$a=1 \quad b=-12 \quad c=35$

$5, 7$

$\alpha+\beta = -12$

$\alpha\beta = 35$

$-5 \quad -7$

E+E=E

E-E=E

E+O=O

E-O=O

O+O=E

O-O=E

Examples

2^{336}

2	336
2	168
2	84
2	42
2	21

$+16 \quad -21$

$= -16, +21$

B	C	
+	+	(−, −)
−	+	(+, +)

$X^2-5x-336=0$

$Y^2+53y+592=0$

$\alpha+\beta=-5$

$\alpha\beta=-336$

2	592
2	296
2	148
2	74
	37

$16, 37$

$y=-16, -37$

EduTap

www.edutap.co.in hello@edutap.co.in +91 8146207241

In the following question two equations are given in variables x and y. You have to solve these equations and determine the relation between x and y

Q.2 I. $x^2 + 7x + 12 = 0$

II. $y^2 + 8y + 15 = 0$

[a] x > y

[b] x < y

[c] x ≥ y

[d] x ≤ y

[e] x = y or no relation between x and y

$x^2+7x+12=0$

Sum = 7 12

3, 4

$x = -3, -4$

$y^2+8y+15=0$

Sum = 8 15

3, 5

$y = -3, -5$

x		y
-3	=	-3
-4	<	-3
-3	>	-5
-4	>	-5

< >

No Relation

EduTap

RBI Grade B
2022

Quadratic Equation

Roots $= \dfrac{-b \pm \sqrt{b^2-4ac}}{2}$

$b^2-4ac = D$ (Discriminant)

↓

Nature of Roots

$D > 0 \rightarrow$ Real and unequal

$D = 0 \rightarrow$ Real and equal

$D < 0 \rightarrow$ Imaginary

$x^2-5x+6=0$ $\quad a=1$, $b=-5$, $c=6$

(1) real and unequal

(2) real and equal

(3) Imaginary

(4) None of them

$D = b^2-4ac$

$D = (-5)^2-4(1)(6)$

$= 25-24$

$= 1$

$D > 0$

Quadratic Equation

$ax^2+bx+c=0$

α, β

$(x-\alpha)(x-\beta)=0$

$x^2-\alpha x-\beta x+\alpha\beta=0$

$x^2-(\alpha+\beta)x+\alpha\beta=0$ — (1)

$x^2-7x+12=0$

$-7 \quad 12$

$-3, -4$

$3, 4$

$ax^2+bx+c=0$

dividing both side by a

$x^2+\frac{b}{a}x+\frac{c}{a}=0$ — (2)

$-(\alpha+\beta)=\frac{b}{a}$

$\boxed{\alpha+\beta=-\frac{b}{a}}$

Sum of Roots

$\alpha\beta=\frac{c}{a}$

Product of Roots

B C

$+ \; +$ $\quad -, -$

$- \; +$ $\quad +, +$

Sum = Odd Product

Roots

www.edutap.co.in hello@edutap.co.in +91 8146207241

Q3.

I. $3x^2 + 29x + 56 = 0$

II. $2y^2 + 15y + 25 = 0$

[1] x > y

[2] x ≤ y

[3] x ≥ y

[4] x < y

[5] x = y or relationship between x and y can't be established

$3x^2+29x+56=0$

29 ✓ $\quad 56\times3 = 168$ ✓

$8, 21$

$x = -\frac{8}{3}, -\frac{21}{3}$

$= -2.66, -7$ ✓

$2y^2+15y+25=0$

$15 \quad 25\times2 = 50$

$5, 10$

$y = -\frac{5}{2}, -\frac{10}{2}$

$= -2.5, -5$

$2 \mid 168$

$2 \mid 84$

$2 \mid 42$

21

$x \quad y$

$-2.66 < -2.5$

$-2.66 > -5$

EduTap

www.edutap.co.in hello@edutap.co.in +91 8146207241

Q4.

I. $20x^2 - 9x + 1 = 0$

II. $12y^2 - 7y + 1 = 0$

[1] x > y

[2] x ≤ y

[3] x ≥ y

[4] x < y

[5] x = y or relationship between x and y can't be established

$20x^2 - 9x + 1 = 0$

$-9 \qquad 1 \times 20 = 20$

$-4, -5$

$x = \frac{4}{20}, \frac{5}{20}$

$= \frac{1}{5}, \frac{1}{4} = .2, .25$

$12y^2 - 7y + 1 = 0$

$-7 \qquad 1 \times 12 = 12$

$-3, -4$

$y = \frac{3}{12}, \frac{4}{12} = \frac{1}{4}, \frac{1}{3}$

$= .25, .33$

x y

$.2 < .25$

$.25 = .25$

$.2 < .33$

$.25 < .33$

$x \leq y$

EduTap

www.edutap.co.in hello@edutap.co.in +91 8146207241

Q5. Directions: Find the value of "x" and "y" and answer accordingly

I. $5x^2 + 44x + 32 = 0$

II. $9y^2 + 74y + 77 = 0$

A. $x > y$

B. $x \geq y$

C. $x < y$

D. $x \leq y$

E. $x = y$ or relationship between x and y cannot be established.

(1) $5x^2+44x+32=0$

$44 \quad 32\times5=160$

$40, 4$

$x = -\frac{40}{5}, -\frac{4}{5}$

$= -8, -.8$

$9y^2+74y+77=0$

74

77×9

$7\times11\times3\times3$

63×11

$y = -\frac{63}{9}, -\frac{11}{9}$

$= -7, -1.2$

$x \quad y$

$-8 < -7$

$-.8 > -7$

EduTap

4.5

www.edutap.co.in hello@edutap.co.in +91 8146207241

Q.6

i $8x^2 + 58x + 39 = 0$

ii $8y^2 - 14y - 15 = 0$

[A] If x < y

[B] If x > y

[C] If x ≥ y

[D] If x ≤ y

[E] If x = y or no relation can be established

$8x^2+58x+39=0$

58

8×39

$2\times2\times2\times3\times13$

52 6

$x = -\frac{52}{8}, -\frac{6}{8}$

$= -6.5, -.75$

$8y^2-14y-15=0$

-14 $-15\times8 = -120$

$-20 + 6$

$y = \frac{+20}{8}, \frac{-6}{8}$

$= -\frac{3}{4} = -.75$

$x<y$

$x=y$

$x<y$

$x \le y$

EduTap

www.edutap.co.in hello@edutap.co.in +91 8146207241

Q.7

I : x = $\sqrt{2916}$

II : $y^2 = 2916$

[1] x < y

[2] x > y

[3] x ≤ y

[4] x ≥ y

[5] x = y or no relation can be established

$x = \sqrt{2916}$

$x = +54$

$y^2 = 2916$

$y = \sqrt{2916}$

$y = \pm 54$

$= +54, -54$

$x = y$

$x > y$

$\boxed{x \geq y}$

2916

2916

56

54

2500

416

50+4

54

$5^2 = 25$

$6^2 = 36$

30

www.edutap.co.in hello@edutap.co.in +91 8146207241

Q8

I. $5\sqrt{2}x^2 + x - 3\sqrt{2} = 0$

II. $8y^2 + 10y - 7 = 0$

[1] $x > y$

[2] $x \leq y$

[3] $x \geq y$

[4] $x < y$

[5] $x = y$ or relationship between x and y can't be established

$5\sqrt{2}x^2 + x - 3\sqrt{2} = 0$

$1 \quad -3\sqrt{2} \times 5\sqrt{2}$

-30

$6, -5$

$x = \frac{-6}{5\sqrt{2}} \quad \frac{+5}{5\sqrt{2}}$

$-$ $+$

$8y^2 + 10y - 7 = 0$

$10 \quad -7 \times 8$

$= -56$

$14 \quad -4$

$y = \frac{-14}{8} \quad \frac{+4}{8}$

$-$ $+$

EduTap

www.edutap.co.in hello@edutap.co.in +91 8146207241

Given below are two equations. Based on the given information, you have to determine the relation between the two quantities. You should use the given data to choose among the possible answers.

Q9 I : $x^2 + 5\sqrt{3}x - 42 = 0$

II : $y^2 - 8\sqrt{2}y + 30 = 0$

[1] x > y

[2] x < y

[3] x ≥ y

[4] x ≤ y

[5] x=y or no relation can be established

$x^2+5\sqrt{3}x-42=0$

$5\sqrt{3}$ -42

① 5 $\frac{-42}{3}=-14$

$7\sqrt{3}$ $-2\sqrt{3}$

$7\sqrt{3}$ $-2\sqrt{3}$

$x=-7\sqrt{3}$ $+2\sqrt{3}$

$y^2-8\sqrt{2}y+30=0$

$-8\sqrt{2}$ 30

-8 $\frac{30}{2}=15$

$-5,-3$

$-5\sqrt{2}$ $-3\sqrt{2}$

$y=5\sqrt{2}, 3\sqrt{2}$

$x<y$

$x<y$

$x<y$

$\sqrt{3}=1.73$

$\sqrt{2}=1.41$

$2\sqrt{3}=2\times1.73=3.46$

$3\sqrt{2}=3\times1.41=4.\sim$

Q.10

I : $8x^2 + (4+2\sqrt{2})x + \sqrt{2} = 0$

II : $y^2 - (3+\sqrt{3})y + 3\sqrt{3} = 0$

[1] x < y

[2] x > y

[3] x ≤ y

[4] x ≥ y

[5] x = y or no relation can be established

(−, −)

(+, +)

x < y

B	C
+	+
−	+

(−, −)

(+, +)

2nd //

EduTap

www.edutap.co.in hello@edutap.co.in +91 8146207241

Q11. Consider the following pairs:

Column 1	Column 2
1. $x^2 - 30x + 221 = 0$	13,17
2. $y^2 - 36y + 323 = 0$	19,17
3. $z = \sqrt{289}$	-17,17

Which of the above pair is not correctly match?

A. Only 2
B. Only 3
C. Only 1
D. Both 1 and 3
E. Both 2 and 3

EduTap

RBI Grade B
2021

Q12. Select the correct match given in the options.

Equations	Conditions
a). $8x^2 - 78x + 169 = 0$	d). Difference of roots is 7
b). $2x^2 + 11x + 14 = 0$	e). Product of both root value is negative
c). $X^2-19x+78=0$	f). Both roots are negative values

A. a-f, a-e

B. c-d, b-e, a-f

C. c-d, b-f

D. c-f, a-d

E. b-d, c-f

EduTap

Q.13 The following equation must satisfy the condition : (y < x)

Match the column accordingly

Column – I	Column – II
A) $x^2 + 21x + 108 = 0$	D) $y^2 + 27y + 180 = 0$
B) $x^2 - 3x - 28 = 0$	E) $y^2 - 42y + 440 = 0$
C) $x^2 - 28x + 171 = 0$	F) $y^2 - 2y - 35 = 0$

[1] C-D, C-F

[2] A-F, A-E, B-E

[3] Only A-E

[4] A-E, C-E

[5] A-D, B-E

EduTap

RBI Grade B
2021

Q.14 5x – 2y = 5 and 1 + (x/y) = 8/5.

Quantity I: Value of 3x + y?

Quantity II: Value of 3y - x?

A. Quantity I >Quantity II

B. Quantity I < Quantity II

C. Quantity I ≤ Quantity II

D. Quantity I=quantity II or No relation

E. Quantity I ≥ Quantity II

→ 3×3+5=14

→ 3×5−3=12

1 < 2

5x−2y=5

$1+\frac{x}{y}=\frac{8}{5}$

$\frac{x}{y}=\frac{8}{5}-1=\frac{3}{5}$

5×3−2(5)=5

15−10=5

EduTap

RBI Grade B
2022

In the following questions three equations are given in variables x. Third equation is equal to the sum of the first two equations. You have to solve the questions based on given information.

I. $ax^2 + bx + 4 = 0$

II. $ax^2 + 3x + c = 0$

III. $2x^2 + 7x + \sqrt{49 - 13} = 0$

Note: Eq 3 = Eq 1 + Eq 2

$a+a=2$

$2a=2$

$a=1$

$b+3=7$

$b=7-3=4$

$4+c=\sqrt{49-13}$

$4+c=\sqrt{36}=6$

$c=6-4=2$

Q.15) What is the value of (b+c)?

[a] 9

[b] 7

[c] 15

[d] 6

[e] 10

$4+2=6$

Q.16) What is the product of the roots of equation III.

[a] 3

[b] 16

[c] 22

[d] 14

[e] 8

$2x^2+7x+6=0$

$7 \quad 6\times2=12$

$3,4$

$x=-\frac{3}{2}, -\frac{4}{2}$

$-\frac{3}{2} \times -\frac{4}{2} = 3$

EduTap

RBI Grade B
2022

In the following questions three equations are given in variables x. Third equation is equal to the sum of the first two equations. You have to solve the questions based on given information.

I. $ax^2 + bx + 4 = 0$
II. $ax^2 + 3x + c = 0$
III. $2x^2 + 7x + \sqrt{49 - 13} = 0$

Note: Eq 3 = Eq 1 + Eq 2

$x^2+3x+2=0$

3 2

1, 2

$x = -1, -2$

Q.17) What is the square of the larger root of equation II?

[a] 1
[b] 25
[c] 16
[d] 9
[e] 4

$(-1)^2 = 1$

Read the following information carefully to answer the questions that follow.

In the following questions an equation followed by some information is given. You have to choose best suitable option.

$x^2 - 28x + k = 0$

Root of the equation are a and b.

Here, $a^2 = 9b$ and a, b > 0.

Q18. Find the value of k.

A. 336

B. 252

C. 125

D. 192

E. None of these

$ax^2 + bx + c = 0$

$x^2 - 28x + k = 0$

Sum of Roots $= -\frac{b}{a}$

Product $= \frac{c}{a}$

$a + b = -\frac{(-28)}{1}$

$a + b = 28 \rightarrow$

$ab = k$

$a^2 = 9b$

$\frac{a^2}{9} = b$

$a + b = 28$

$a = 12$

$b = 28 - 12 = 16$

$ab = k$

$12 \times 16 = 192$

$a + \frac{a^2}{9} = 28$

$9a + a^2 = 252$

$a^2 + 9a - 252 = 0$

$21, 12$

$a = -21, +12$

Q.19) Solve the given equations and find the relation between x and y.

I: $4x^2 + 2ax - 116 = 0$

II: $3y^2 + 3by + 15a = 0$

III: 135% of 480 + a% of 320 = 728

IV: 464 ÷ 29 × 10 + 126 = b + 256

[1] x> y

[2] x< y

[3] x ≥ y

[4] x ≤ y

[5] Either x = y or the relation cannot be established

(3) $135\% \text{ of } 480 + \frac{a}{100} \times 320 = 728$

$27 \frac{135}{100} \times 480$

$a = 80 \times 5$

$a = 25$

(4) $\frac{464}{29} \times 10 + 126 = b + 256$

$b = 286 - 256$

$b = 30$

(1) $4x^2 + 50x - 116 = 0$

$2x^2 + 25x - 58 = 0$

$-58 \times 2 = -116$

$29, -4$

$x = -29/2, 4/2$

$x = -14.5, 2$

(2) $3y^2 + 90y + 375 = 0$

$y^2 + 30y + 125 = 0$

$25, 5$

$y = -25, -5$

x y

$-14.5 > -25$

$-14.5 < -5$

Q.20 If 'a' and 'b' are the roots of the equation $x^2 + 5x + 6 = 0$, then find out the equation whose roots are '2a' and '2b'.

[1] $x^2 + 8x + 24 = 0$

[2] $x^2 + 12x + 44 = 0$

[3] $x^2 + 10x + 24 = 0$

[4] $x^2 + 16x + 56 = 0$

[5] Can't be determined

$x^2+5x+6=0$

$ab=6$

$a+b=5$

$2, 3$

$-2, -3$

$a=-2$

$b=-3$

Roots $2a, 2b$

$2x-2 \quad 2x-3$

$=-4 \quad =-6$

α, β

$(x-\alpha)(x-\beta)=0$

$x^2-(\alpha+\beta)x+\alpha\beta=0$

$\alpha+\beta$: Sum of Roots

$\alpha\beta$: Product of Roots

$x^2-(-4-6)x+(-4)(-6)=0$

$x^2+10x+24=0$

Read the following information carefully to answer the questions that follow.

In the following questions an equation followed by some information is given. You have to choose best suitable option.

$x^2 - 28x + k = 0$

Root of the equation are a and b.

Here, $a^2 = 9b$ and a, b > 0.

HomeWork

Q21. Find the equation whose roots are 1/a and 1/b.

A. $192x^2 + 28x + 1 = 0$

B. $192x^2 - 28x + 1 = 0$

C. $192x^2 + 28x - 1 = 0$

D. $192x^2 - 28x - 1 = 0$

E. None of these

EduTap

www.edutap.co.in hello@edutap.co.in +91 8146207241

Thank You

Monday
Wed
Fri
Quant, Reasoning.

For More Info Contact us:

+91 8146207241

hello@edutap.co.in

www.edutap.co.in