



THE MATH HUB

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QUADRATIC EQUATIONS & BASIC INEQUALITIES MCQs

100 FULLY SOLVED MCQs

PPSC, FPSC & ONE PAPER EXAMS

NTS • CSS MPT • PMS • Government Job Tests

Factorization • Quadratic Formula • Discriminant • Roots • Inequalities

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QUADRATIC EQUATIONS & BASIC INEQUALITIES MCQs | 100 FULLY SOLVED MCQs

Fast Foundation for One-Paper Exams

Standard form

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

Quadratic formula

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

Discriminant

$$D = b^2 - 4ac$$

Root relations

$$\alpha + \beta = -\frac{b}{a}, \quad \alpha\beta = \frac{c}{a}$$

Inequality sign Multiplying or dividing by a negative number reverses the inequality sign.

Quadratic inequality Factor first, mark the critical roots, then inspect the sign on the intervals.

Factorable Quadratic Equations**MCQ 1**Solve $x^2 - 3x + 2 = 0$.

A. $x = 1, 2$

B. $x = -1, -2$

C. $x = 2, 3$

D. $x = 1, -2$

Solution

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

$$(x - 1)(x - 2) = 0$$

$$x = 1 \quad \text{or} \quad x = 2$$

Final Answer

$$x = 1, 2$$

MCQ 2Solve $x^2 - 5x + 6 = 0$.

A. $x = -2, -3$

B. $x = 2, 3$

C. $x = 3, 4$

D. $x = 2, -3$

Solution

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

$$(x - 2)(x - 3) = 0$$

$$x = 2 \quad \text{or} \quad x = 3$$

Final Answer

$$x = 2, 3$$

MCQ 3Solve $x^2 - 7x + 12 = 0$.

A. $x = -3, -4$

B. $x = 4, 5$

C. $x = 3, 4$

D. $x = 3, -4$

Solution

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

$$(x - 3)(x - 4) = 0$$

$$x = 3 \quad \text{or} \quad x = 4$$

Final Answer

$$x = 3, 4$$

MCQ 4Solve $x^2 - 6x + 5 = 0$.

A. $x = -1, -5$

B. $x = 2, 6$

C. $x = 1, -5$

D. $x = 1, 5$

Solution

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

$$(x - 1)(x - 5) = 0$$

$$x = 1 \quad \text{or} \quad x = 5$$

Final Answer

$$x = 1, 5$$

MCQ 5Solve $x^2 - 3x - 4 = 0$.

A. $x = -1, 4$

B. $x = 1, -4$

C. $x = 0, 5$

D. $x = -1, -4$

Solution

$$x^2 - 3x - 4 = 0$$

$$(x + 1)(x - 4) = 0$$

$$x = -1 \quad \text{or} \quad x = 4$$

Final Answer

$$x = -1, 4$$

MCQ 6Solve $x^2 - 3x - 10 = 0$.

A. $x = 2, -5$

B. $x = -2, 5$

C. $x = -1, 6$

D. $x = -2, -5$

Solution

$$x^2 - 3x - 10 = 0$$

$$(x + 2)(x - 5) = 0$$

$$x = -2 \quad \text{or} \quad x = 5$$

Final Answer

$$x = -2, 5$$

MCQ 7Solve $x^2 + 4x + 3 = 0$.

A. $x = 3, 1$

B. $x = -2, 0$

C. $x = -3, -1$

D. $x = -3, 1$

Solution

$$x^2 + 4x + 3 = 0$$

$$(x + 3)(x + 1) = 0$$

$$x = -3 \quad \text{or} \quad x = -1$$

Final Answer

$$x = -3, -1$$

MCQ 10Solve $x^2 - 9x + 20 = 0$.

A. $x = -4, -5$

B. $x = 4, 5$

C. $x = 5, 6$

D. $x = 4, -5$

Solution

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

$$(x - 4)(x - 5) = 0$$

$$x = 4 \quad \text{or} \quad x = 5$$

Final Answer

$$x = 4, 5$$

MCQ 8Solve $x^2 - 8x + 12 = 0$.

A. $x = -2, -6$

B. $x = 3, 7$

C. $x = 2, -6$

D. $x = 2, 6$

Solution

$$x^2 - 8x + 12 = 0$$

$$(x - 2)(x - 6) = 0$$

$$x = 2 \quad \text{or} \quad x = 6$$

Final Answer

$$x = 2, 6$$

MCQ 11Solve $x^2 - 9x + 8 = 0$.

A. $x = -1, -8$

B. $x = 2, 9$

C. $x = 1, 8$

D. $x = 1, -8$

Solution

$$x^2 - 9x + 8 = 0$$

$$(x - 1)(x - 8) = 0$$

$$x = 1 \quad \text{or} \quad x = 8$$

Final Answer

$$x = 1, 8$$

MCQ 9Solve $x^2 - 10x + 21 = 0$.

A. $x = 3, 7$

B. $x = -3, -7$

C. $x = 4, 8$

D. $x = 3, -7$

Solution

$$x^2 - 10x + 21 = 0$$

$$(x - 3)(x - 7) = 0$$

$$x = 3 \quad \text{or} \quad x = 7$$

Final Answer

$$x = 3, 7$$

MCQ 12Solve $x^2 + 2x - 8 = 0$.

A. $x = 4, -2$

B. $x = -3, 3$

C. $x = -4, -2$

D. $x = -4, 2$

Solution

$$x^2 + 2x - 8 = 0$$

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

$$x = -4 \quad \text{or} \quad x = 2$$

Final Answer

$$x = -4, 2$$

MCQ 13Solve $x^2 + 2x - 15 = 0$.

A. $x = -5, 3$

B. $x = 5, -3$

C. $x = -4, 4$

D. $x = -5, -3$

Solution

$$x^2 + 2x - 15 = 0$$

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

$$x = -5 \quad \text{or} \quad x = 3$$

Final Answer

$$x = -5, 3$$

MCQ 16Solve $x^2 - 11x + 28 = 0$.

A. $x = -4, -7$

B. $x = 5, 8$

C. $x = 4, -7$

D. $x = 4, 7$

Solution

$$x^2 - 11x + 28 = 0$$

$$(x - 4)(x - 7) = 0$$

$$x = 4 \quad \text{or} \quad x = 7$$

Final Answer

$$x = 4, 7$$

MCQ 14Solve $x^2 - 11x + 30 = 0$.

A. $x = -5, -6$

B. $x = 5, 6$

C. $x = 6, 7$

D. $x = 5, -6$

Solution

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

$$(x - 5)(x - 6) = 0$$

$$x = 5 \quad \text{or} \quad x = 6$$

Final Answer

$$x = 5, 6$$

MCQ 17Solve $x^2 + 8x + 12 = 0$.

A. $x = -2, -6$

B. $x = 2, 6$

C. $x = -1, -5$

D. $x = -2, 6$

Solution

$$x^2 + 8x + 12 = 0$$

$$(x + 2)(x + 6) = 0$$

$$x = -2 \quad \text{or} \quad x = -6$$

Final Answer

$$x = -2, -6$$

MCQ 15Solve $x^2 - 11x + 18 = 0$.

A. $x = -2, -9$

B. $x = 3, 10$

C. $x = 2, 9$

D. $x = 2, -9$

Solution

$$x^2 - 11x + 18 = 0$$

$$(x - 2)(x - 9) = 0$$

$$x = 2 \quad \text{or} \quad x = 9$$

Final Answer

$$x = 2, 9$$

MCQ 18Solve $x^2 - 5x - 24 = 0$.

A. $x = 3, -8$

B. $x = -3, 8$

C. $x = -2, 9$

D. $x = -3, -8$

Solution

$$x^2 - 5x - 24 = 0$$

$$(x + 3)(x - 8) = 0$$

$$x = -3 \quad \text{or} \quad x = 8$$

Final Answer

$$x = -3, 8$$

MCQ 19Solve $x^2 - 14x + 48 = 0$.**A.** $x = -6, -8$ **B.** $x = 7, 9$ **C.** $x = 6, 8$ **D.** $x = 6, -8$ **Solution**

$$x^2 - 14x + 48 = 0$$

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

$$x = 6 \quad \text{or} \quad x = 8$$

Final Answer

$$x = 6, 8$$

MCQ 22Solve $x^2 - 6x - 7 = 0$.**A.** $x = 1, -7$ **B.** $x = -1, 7$ **C.** $x = 0, 8$ **D.** $x = -1, -7$ **Solution**

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

$$(x + 1)(x - 7) = 0$$

$$x = -1 \quad \text{or} \quad x = 7$$

Final Answer

$$x = -1, 7$$

MCQ 20Solve $x^2 - 11x + 10 = 0$.**A.** $x = -1, -10$ **B.** $x = 2, 11$ **C.** $x = 1, -10$ **D.** $x = 1, 10$ **Solution**

$$x^2 - 11x + 10 = 0$$

$$(x - 1)(x - 10) = 0$$

$$x = 1 \quad \text{or} \quad x = 10$$

Final Answer

$$x = 1, 10$$

MCQ 23Solve $x^2 - 14x + 45 = 0$.**A.** $x = -5, -9$ **B.** $x = 6, 10$ **C.** $x = 5, 9$ **D.** $x = 5, -9$ **Solution**

$$x^2 - 14x + 45 = 0$$

$$(x - 5)(x - 9) = 0$$

$$x = 5 \quad \text{or} \quad x = 9$$

Final Answer

$$x = 5, 9$$

MCQ 21Solve $x^2 - 12x + 27 = 0$.**A.** $x = 3, 9$ **B.** $x = -3, -9$ **C.** $x = 4, 10$ **D.** $x = 3, -9$ **Solution**

$$x^2 - 12x + 27 = 0$$

$$(x - 3)(x - 9) = 0$$

$$x = 3 \quad \text{or} \quad x = 9$$

Final Answer

$$x = 3, 9$$

MCQ 24Solve $x^2 - 2x - 24 = 0$.**A.** $x = 4, -6$ **B.** $x = -3, 7$ **C.** $x = -4, -6$ **D.** $x = -4, 6$ **Solution**

$$x^2 - 2x - 24 = 0$$

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

$$x = -4 \quad \text{or} \quad x = 6$$

Final Answer

$$x = -4, 6$$

MCQ 25Solve $x^2 - 13x + 22 = 0$.**A.** $x = 2, 11$ **B.** $x = -2, -11$ **C.** $x = 3, 12$ **D.** $x = 2, -11$ **Solution**

$$x^2 - 13x + 22 = 0$$

$$(x - 2)(x - 11) = 0$$

$$x = 2 \quad \text{or} \quad x = 11$$

Final Answer

$$x = 2, 11$$

MCQ 26Solve $x^2 - 15x + 56 = 0$.**A.** $x = -7, -8$ **B.** $x = 7, 8$ **C.** $x = 8, 9$ **D.** $x = 7, -8$ **Solution**

$$x^2 - 15x + 56 = 0$$

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

$$x = 7 \quad \text{or} \quad x = 8$$

Final Answer

$$x = 7, 8$$

MCQ 27Solve $x^2 + 7x + 10 = 0$.**A.** $x = 5, 2$ **B.** $x = -4, -1$ **C.** $x = -5, -2$ **D.** $x = -5, 2$ **Solution**

$$x^2 + 7x + 10 = 0$$

$$(x + 5)(x + 2) = 0$$

$$x = -5 \quad \text{or} \quad x = -2$$

Final Answer

$$x = -5, -2$$

MCQ 28Solve $x^2 - 13x + 36 = 0$.**A.** $x = -4, -9$ **B.** $x = 5, 10$ **C.** $x = 4, -9$ **D.** $x = 4, 9$ **Solution**

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

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

$$x = 4 \quad \text{or} \quad x = 9$$

Final Answer

$$x = 4, 9$$

MCQ 29Solve $x^2 - 16x + 60 = 0$.**A.** $x = 6, 10$ **B.** $x = -6, -10$ **C.** $x = 7, 11$ **D.** $x = 6, -10$ **Solution**

$$x^2 - 16x + 60 = 0$$

$$(x - 6)(x - 10) = 0$$

$$x = 6 \quad \text{or} \quad x = 10$$

Final Answer

$$x = 6, 10$$

MCQ 30Solve $x^2 - 2x - 15 = 0$.**A.** $x = 3, -5$ **B.** $x = -3, 5$ **C.** $x = -2, 6$ **D.** $x = -3, -5$ **Solution**

$$x^2 - 2x - 15 = 0$$

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

$$x = -3 \quad \text{or} \quad x = 5$$

Final Answer

$$x = -3, 5$$

Quadratic Formula and Discriminant**MCQ 31**Find the discriminant of $1x^2 + 5x + 6 = 0$.**A.** 5**B.** -3**C.** 1**D.** -1**Solution**

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

Final Answer

$$1$$

MCQ 32Find the discriminant of $1x^2 + 4x + 4 = 0$.

- A. 4 B. -4
C. 1 D. 0

Solution

$$D = b^2 - 4ac = (4)^2 - 4(1)(4) = 0$$

Final Answer

0

MCQ 33Find the discriminant of $1x^2 + 2x + 5 = 0$.

- A. -16 B. -12
C. -20 D. 16

Solution

$$D = b^2 - 4ac = (2)^2 - 4(1)(5) = -16$$

Final Answer

-16

MCQ 34Find the discriminant of $2x^2 + 7x + 3 = 0$.

- A. 29 B. 25
C. 21 D. -25

Solution

$$D = b^2 - 4ac = (7)^2 - 4(2)(3) = 25$$

Final Answer

25

MCQ 35Find the discriminant of $3x^2 + 6x + 3 = 0$.

- A. 4 B. -4
C. 0 D. 1

Solution

$$D = b^2 - 4ac = (6)^2 - 4(3)(3) = 0$$

Final Answer

0

MCQ 36Find the discriminant of $2x^2 + 1x + 4 = 0$.

- A. -27 B. -35
C. 31 D. -31

Solution

$$D = b^2 - 4ac = (1)^2 - 4(2)(4) = -31$$

Final Answer

-31

MCQ 37Find the discriminant of $1x^2 - 3x - 10 = 0$.

- A. 49 B. 53
C. 45 D. -49

Solution

$$D = b^2 - 4ac = (-3)^2 - 4(1)(-10) = 49$$

Final Answer

49

MCQ 38Find the discriminant of $4x^2 + 4x + 1 = 0$.

- A. 4 B. 0
C. -4 D. 1

Solution

$$D = b^2 - 4ac = (4)^2 - 4(4)(1) = 0$$

Final Answer

0

MCQ 39Find the discriminant of $3x^2 + 5x - 2 = 0$.

- A. 53 B. 45
C. 49 D. -49

Solution

$$D = b^2 - 4ac = (5)^2 - 4(3)(-2) = 49$$

Final Answer

49

MCQ 40Find the discriminant of $2x^2 - 8x + 8 = 0$.

- A. 4 B. -4
C. 1 D. 0

Solution

$$D = b^2 - 4ac = (-8)^2 - 4(2)(8) = 0$$

Final Answer

0

MCQ 41What is the nature of the roots of $1x^2 + 5x + 6 = 0$?

- A. Distinct real roots B. Equal real roots
C. No real roots D. Three real roots

Solution

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

$$D > 0 \Rightarrow \text{distinct real roots}$$

Final Answer

Distinct real roots

MCQ 42What is the nature of the roots of $1x^2 + 4x + 4 = 0$?

- A. Distinct real roots B. Equal real roots
C. No real roots D. Three real roots

Solution

$$D = (4)^2 - 4(1)(4) = 0$$

$$D = 0 \Rightarrow \text{equal real roots}$$

Final Answer

Equal real roots

MCQ 43What is the nature of the roots of $1x^2 + 2x + 5 = 0$?

- A. Distinct real roots B. Equal real roots
C. No real roots D. Three real roots

Solution

$$D = (2)^2 - 4(1)(5) = -16$$

$$D < 0 \Rightarrow \text{no real roots}$$

Final Answer

No real roots

MCQ 44What is the nature of the roots of $2x^2 + 7x + 3 = 0$?

- A. Equal real roots B. No real roots
C. Three real roots D. Distinct real roots

Solution

$$D = (7)^2 - 4(2)(3) = 25$$

$$D > 0 \Rightarrow \text{distinct real roots}$$

Final Answer

Distinct real roots

MCQ 45What is the nature of the roots of $3x^2 + 6x + 3 = 0$?

- A. Equal real roots B. Distinct real roots
C. No real roots D. Three real roots

Solution

$$D = (6)^2 - 4(3)(3) = 0$$

$$D = 0 \Rightarrow \text{equal real roots}$$

Final Answer

Equal real roots

MCQ 46What is the nature of the roots of $2x^2 + 1x + 4 = 0$?

- A. Distinct real roots B. No real roots
C. Equal real roots D. Three real roots

Solution

$$D = (1)^2 - 4(2)(4) = -31$$

$$D < 0 \Rightarrow \text{no real roots}$$

Final Answer

No real roots

MCQ 47What is the nature of the roots of $1x^2 - 3x - 10 = 0$?

- A. Equal real roots B. No real roots
C. Distinct real roots D. Three real roots

Solution

$$D = (-3)^2 - 4(1)(-10) = 49$$

$$D > 0 \Rightarrow \text{distinct real roots}$$

Final Answer

Distinct real roots

MCQ 48What is the nature of the roots of $4x^2 + 4x + 1 = 0$?

- A. Distinct real roots B. No real roots
C. Three real roots D. Equal real roots

Solution

$$D = (4)^2 - 4(4)(1) = 0$$

$$D = 0 \Rightarrow \text{equal real roots}$$

Final Answer

Equal real roots

MCQ 49What is the nature of the roots of $3x^2 + 5x - 2 = 0$?

- A. Distinct real roots B. Equal real roots
C. No real roots D. Three real roots

Solution

$$D = (5)^2 - 4(3)(-2) = 49$$

$$D > 0 \Rightarrow \text{distinct real roots}$$

Final Answer

Distinct real roots

MCQ 50What is the nature of the roots of $2x^2 - 8x + 8 = 0$?

- A. Distinct real roots B. Equal real roots
C. No real roots D. Three real roots

Solution

$$D = (-8)^2 - 4(2)(8) = 0$$

$$D = 0 \Rightarrow \text{equal real roots}$$

Final Answer

Equal real roots

Sum and Product of Roots**MCQ 51**For $2x^2 + 7x + 3 = 0$, find the sum of the roots.

- A. $-5/2$ B. $-9/2$
C. $-7/2$ D. $7/2$

Solution

$$\begin{aligned}\alpha + \beta &= -\frac{b}{a} \\ &= -\frac{7}{2} = -\frac{7}{2}\end{aligned}$$

Final Answer $-\frac{7}{2}$ **MCQ 52**For $3x^2 - 5x + 2 = 0$, find the product of the roots.

- A. $5/3$ B. $-1/3$
C. $-2/3$ D. $2/3$

Solution

$$\begin{aligned}\alpha\beta &= \frac{c}{a} \\ &= \frac{2}{3} = \frac{2}{3}\end{aligned}$$

Final Answer $\frac{2}{3}$ **MCQ 53**For $1x^2 - 9x + 14 = 0$, find the sum of the roots.

- A. 9 B. 10
C. 8 D. -9

Solution

$$\begin{aligned}\alpha + \beta &= -\frac{b}{a} \\ &= -\frac{-9}{1} = 9\end{aligned}$$

Final Answer

9

MCQ 54For $4x^2 + 8x - 3 = 0$, find the product of the roots.

- A. $1/4$ B. $-3/4$
C. $-7/4$ D. $3/4$

Solution

$$\begin{aligned}\alpha\beta &= \frac{c}{a} \\ &= \frac{-3}{4} = -\frac{3}{4}\end{aligned}$$

Final Answer $-\frac{3}{4}$ **MCQ 55**For $5x^2 - 2x - 7 = 0$, find the sum of the roots.

- A. $7/5$ B. $-3/5$
C. $2/5$ D. $-2/5$

Solution

$$\begin{aligned}\alpha + \beta &= -\frac{b}{a} \\ &= -\frac{-2}{5} = \frac{2}{5}\end{aligned}$$

Final Answer $\frac{2}{5}$

MCQ 56For $2x^2 + 3x - 5 = 0$, find the product of the roots.**A.** $-3/2$ **B.** $-7/2$ **C.** $5/2$ **D.** $-5/2$ **Solution**

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

$$= \frac{-5}{2} = \frac{-5}{2}$$

Final Answer

$$\frac{-5}{2}$$

MCQ 57For $1x^2 + 6x + 5 = 0$, find the sum of the roots.**A.** -6 **B.** -5 **C.** -7 **D.** 6 **Solution**

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

$$= -\frac{6}{1} = -6$$

Final Answer

$$-6$$

MCQ 58For $3x^2 + 1x - 4 = 0$, find the product of the roots.**A.** $-1/3$ **B.** $-4/3$ **C.** $-7/3$ **D.** $4/3$ **Solution**

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

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

Final Answer

$$\frac{-4}{3}$$

MCQ 59For $2x^2 - 10x + 8 = 0$, find the sum of the roots.**A.** 6 **B.** 4 **C.** 5 **D.** -5 **Solution**

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

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

Final Answer

$$5$$

MCQ 60For $5x^2 + 15x + 10 = 0$, find the product of the roots.**A.** 3 **B.** 1 **C.** -2 **D.** 2 **Solution**

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

$$= \frac{10}{5} = 2$$

Final Answer

$$2$$

Forming Quadratics from Roots**MCQ 61**

Form the monic quadratic equation whose roots are 2 and 5.

A. $x^2 - 7x + 10 = 0$ **B.** $x^2 + 7x + 10 = 0$ **C.** $x^2 - 7x - 10 = 0$ **D.** $x^2 + 7x - 10 = 0$ **Solution**

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

$$x^2 - (7)x + (2)(5) = 0$$

Final Answer

$$x^2 - 7x + 10 = 0$$

MCQ 62

Form the monic quadratic equation whose roots are 3 and 7.

A. $x^2 + 10x + 21 = 0$ **B.** $x^2 - 10x + 21 = 0$

C. $x^2 - 10x - 21 = 0$ **D.** $x^2 + 10x - 21 = 0$

Solution

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

$$x^2 - (10)x + (3)(7) = 0$$

Final Answer

$$x^2 - 10x + 21 = 0$$

MCQ 63

Form the monic quadratic equation whose roots are -2 and 4.

A. $x^2 + 2x - 8 = 0$ **B.** $x^2 - 2x + 8 = 0$

C. $x^2 - 2x - 8 = 0$ **D.** $x^2 + 2x + 8 = 0$

Solution

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

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

Final Answer

$$x^2 - 2x - 8 = 0$$

MCQ 64

Form the monic quadratic equation whose roots are -3 and -5.

A. $x^2 - 8x + 15 = 0$ **B.** $x^2 + 8x - 15 = 0$

C. $x^2 - 8x - 15 = 0$ **D.** $x^2 + 8x + 15 = 0$

Solution

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

$$x^2 - (-8)x + (-3)(-5) = 0$$

Final Answer

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

MCQ 65

Form the monic quadratic equation whose roots are 1 and 8.

A. $x^2 - 9x + 8 = 0$ **B.** $x^2 + 9x + 8 = 0$

C. $x^2 - 9x - 8 = 0$ **D.** $x^2 + 9x - 8 = 0$

Solution

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

$$x^2 - (9)x + (1)(8) = 0$$

Final Answer

$$x^2 - 9x + 8 = 0$$

MCQ 66

Form the monic quadratic equation whose roots are 4 and 6.

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

B. $x^2 - 10x + 24 = 0$

C. $x^2 - 10x - 24 = 0$

D. $x^2 + 10x - 24 = 0$

Solution

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

$$x^2 - (10)x + (4)(6) = 0$$

Final Answer

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

MCQ 67

Form the monic quadratic equation whose roots are -1 and 9.

A. $x^2 + 8x - 9 = 0$

B. $x^2 - 8x + 9 = 0$

C. $x^2 - 8x - 9 = 0$

D. $x^2 + 8x + 9 = 0$

Solution

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

$$x^2 - (8)x + (-1)(9) = 0$$

Final Answer

$$x^2 - 8x - 9 = 0$$

MCQ 68

Form the monic quadratic equation whose roots are 5 and 10.

A. $x^2 + 15x + 50 = 0$

B. $x^2 - 15x - 50 = 0$

C. $x^2 + 15x - 50 = 0$

D. $x^2 - 15x + 50 = 0$

Solution

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

$$x^2 - (15)x + (5)(10) = 0$$

Final Answer

$$x^2 - 15x + 50 = 0$$

MCQ 69

Form the monic quadratic equation whose roots are -4 and 3.

A. $x^2 + 1x - 12 = 0$

B. $x^2 - 1x - 12 = 0$

C. $x^2 + 1x + 12 = 0$

D. $x^2 - 1x + 12 = 0$

Solution

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

$$x^2 - (-1)x + (-4)(3) = 0$$

Final Answer

$$x^2 + 1x - 12 = 0$$

MCQ 70

Form the monic quadratic equation whose roots are 6 and 7.

- A. $x^2 + 13x + 42 = 0$ B. $x^2 - 13x + 42 = 0$
 C. $x^2 - 13x - 42 = 0$ D. $x^2 + 13x - 42 = 0$

Solution

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

$$x^2 - (13)x + (6)(7) = 0$$

Final Answer

$$x^2 - 13x + 42 = 0$$

Basic Linear Inequalities**MCQ 71**

Solve $3x + 5 < 20$.

- A. $x > 5$ B. $x < 6$
 C. $x < 5$ D. $x > 6$

Solution

$$3x + 5 < 20$$

$$3x < 15$$

$$x < 5$$

Final Answer

$$x < 5$$

MCQ 72

Solve $4x - 3 > 13$.

- A. $x < 4$ B. $x > 5$
 C. $x < 5$ D. $x > 4$

Solution

$$4x - 3 > 13$$

$$4x > 16$$

$$x > 4$$

Final Answer

$$x > 4$$

MCQ 73

Solve $5x + 2 \leq 27$.

- A. $x \leq 5$ B. $x \geq 5$
 C. $x \leq 6$ D. $x \geq 6$

Solution

$$5x + 2 \leq 27$$

$$5x \leq 25$$

$$x \leq 5$$

Final Answer

$$x \leq 5$$

MCQ 74

Solve $2x + 7 \geq 19$.

- A. $x \leq 6$ B. $x \geq 6$
 C. $x \geq 7$ D. $x \leq 7$

Solution

$$2x + 7 \geq 19$$

$$2x \geq 12$$

$$x \geq 6$$

Final Answer

$$x \geq 6$$

MCQ 75

Solve $-3x + 4 < 13$.

- A. $x < -3$ B. $x > -2$
 C. $x > -3$ D. $x < -2$

Solution

$$-3x + 4 < 13$$

$$-3x < 9$$

$$x > \frac{9}{-3} = -3$$

Final Answer

$$x > -3$$

MCQ 76Solve $-2x + 5 > -7$.

A. $x > 6$

B. $x < 7$

C. $x > 7$

D. $x < 6$

Solution

$$-2x + 5 > -7$$

$$-2x > -12$$

$$x < \frac{-12}{-2} = 6$$

Final Answer

$$x < 6$$

MCQ 77Solve $6x - 8 \leq 10$.

A. $x \leq 3$

B. $x \geq 3$

C. $x \leq 4$

D. $x \geq 4$

Solution

$$6x - 8 \leq 10$$

$$6x \leq 18$$

$$x \leq 3$$

Final Answer

$$x \leq 3$$

MCQ 78Solve $7x + 1 > 29$.

A. $x < 4$

B. $x > 4$

C. $x > 5$

D. $x < 5$

Solution

$$7x + 1 > 29$$

$$7x > 28$$

$$x > 4$$

Final Answer

$$x > 4$$

MCQ 79Solve $-4x + 3 \geq 15$.

A. $x \geq -3$

B. $x \leq -2$

C. $x \leq -3$

D. $x \geq -2$

Solution

$$-4x + 3 \geq 15$$

$$-4x \geq 12$$

$$x \leq \frac{12}{-4} = -3$$

Final Answer

$$x \leq -3$$

MCQ 80Solve $8x - 5 < 27$.

A. $x > 4$

B. $x < 5$

C. $x > 5$

D. $x < 4$

Solution

$$8x - 5 < 27$$

$$8x < 32$$

$$x < 4$$

Final Answer

$$x < 4$$

MCQ 81Solve $5x - 10 > 15$.

A. $x > 5$

B. $x < 5$

C. $x > 6$

D. $x < 6$

Solution

$$5x - 10 > 15$$

$$5x > 25$$

$$x > 5$$

Final Answer

$$x > 5$$

MCQ 82Solve $3x + 9 < 0$.

A. $x > -3$

B. $x < -3$

C. $x < -2$

D. $x > -2$

Solution

$$3x + 9 < 0$$

$$3x < -9$$

$$x < -3$$

Final Answer

$$x < -3$$

MCQ 85Solve $9x + 4 < 31$.

A. $x < 3$

B. $x > 3$

C. $x < 4$

D. $x > 4$

Solution

$$9x + 4 < 31$$

$$9x < 27$$

$$x < 3$$

Final Answer

$$x < 3$$

MCQ 83Solve $-5x + 2 \leq 17$.

A. $x \leq -3$

B. $x \geq -2$

C. $x \geq -3$

D. $x \leq -2$

Solution

$$-5x + 2 \leq 17$$

$$-5x \leq 15$$

$$x \geq \frac{15}{-5} = -3$$

Final Answer

$$x \geq -3$$

MCQ 86Solve $4x + 12 > 0$.

A. $x < -3$

B. $x > -3$

C. $x > -2$

D. $x < -2$

Solution

$$4x + 12 > 0$$

$$4x > -12$$

$$x > -3$$

Final Answer

$$x > -3$$

MCQ 84Solve $2x - 6 \geq 8$.

A. $x \leq 7$

B. $x \geq 8$

C. $x \leq 8$

D. $x \geq 7$

Solution

$$2x - 6 \geq 8$$

$$2x \geq 14$$

$$x \geq 7$$

Final Answer

$$x \geq 7$$

MCQ 87Solve $-2x - 3 < 9$.

A. $x < -6$

B. $x > -5$

C. $x > -6$

D. $x < -5$

Solution

$$-2x - 3 < 9$$

$$-2x < 12$$

$$x > \frac{12}{-2} = -6$$

Final Answer

$$x > -6$$

MCQ 88Solve $6x + 5 \geq -7$.

A. $x \leq -2$

B. $x \geq -1$

C. $x \leq -1$

D. $x \geq -2$

Solution

$$6x + 5 \geq -7$$

$$6x \geq -12$$

$$x \geq -2$$

Final Answer

$$x \geq -2$$

MCQ 89Solve $3x - 15 \leq 6$.

A. $x \leq 7$

B. $x \geq 7$

C. $x \leq 8$

D. $x \geq 8$

Solution

$$3x - 15 \leq 6$$

$$3x \leq 21$$

$$x \leq 7$$

Final Answer

$$x \leq 7$$

MCQ 90Solve $-7x + 1 > -13$.

A. $x > 2$

B. $x < 2$

C. $x < 3$

D. $x > 3$

Solution

$$-7x + 1 > -13$$

$$-7x > -14$$

$$x < \frac{-14}{-7} = 2$$

Final Answer

$$x < 2$$

Quadratic Inequalities**MCQ 91**Solve $x^2 - 4x + 3 < 0$.

A. $x < 1$

B. $x < 3$

C. $1 < x < 3$

D. $x > 1$ or $x > 3$

Solution

$$x^2 - 4x + 3 = (x - 1)(x - 3)$$

Critical points: $x = 1, 3$

Required sign occurs between the roots.

Final Answer

$$1 < x < 3$$

MCQ 92Solve $x^2 - 7x + 10 > 0$.

A. $2 < x < 5$

B. $x > 2$

C. $x < 5$

D. $x > 5$ or $x < 2$

Solution

$$x^2 - 7x + 10 = (x - 2)(x - 5)$$

Critical points: $x = 2, 5$

Required sign occurs outside the roots.

Final Answer

$$x > 5 \text{ or } x < 2$$

MCQ 93Solve $x^2 - 3x - 4 \leq 0$.

A. $-1 \leq x \leq 4$

B. $x \leq -1$

C. $x \leq 4$

D. $x \geq -1$ or $x \geq 4$

Solution

$$x^2 - 3x - 4 = (x + 1)(x - 4)$$

Critical points: $x = -1, 4$

Required sign occurs between the roots.

Final Answer

$$-1 \leq x \leq 4$$

MCQ 94Solve $x^2 - 6x + 0 \geq 0$.

A. $0 < x < 6$

B. $x \geq 6$ or $x \leq 0$

C. $x > 0$

D. $x < 6$

Solution

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

Critical points: $x = 0, 6$

Required sign occurs outside the roots.

Final Answer

$$x \geq 6 \text{ or } x \leq 0$$

MCQ 95Solve $x^2 - 10x + 21 < 0$.

A. $x < 3$

B. $x < 7$

C. $3 < x < 7$

D. $x > 3$ or $x > 7$

Solution

$$x^2 - 10x + 21 = (x - 3)(x - 7)$$

Critical points: $x = 3, 7$

Required sign occurs between the roots.

Final Answer

$$3 < x < 7$$

MCQ 96Solve $x^2 + 0x - 4 > 0$.

A. $-2 < x < 2$

B. $x > -2$

C. $x < 2$

D. $x > 2$ or $x < -2$

Solution

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

Critical points: $x = -2, 2$

Required sign occurs outside the roots.

Final Answer

$$x > 2 \text{ or } x < -2$$

MCQ 97Solve $x^2 - 13x + 36 \leq 0$.

A. $4 \leq x \leq 9$

B. $x \leq 4$

C. $x \leq 9$

D. $x \geq 4$ or $x \geq 9$

Solution

$$x^2 - 13x + 36 = (x - 4)(x - 9)$$

Critical points: $x = 4, 9$

Required sign occurs between the roots.

Final Answer

$$4 \leq x \leq 9$$

MCQ 98Solve $x^2 - 9x + 8 \geq 0$.

A. $1 < x < 8$

B. $x \geq 8$ or $x \leq 1$

C. $x > 1$

D. $x < 8$

Solution

$$x^2 - 9x + 8 = (x - 1)(x - 8)$$

Critical points: $x = 1, 8$

Required sign occurs outside the roots.

Final Answer

$$x \geq 8 \text{ or } x \leq 1$$

MCQ 99Solve $x^2 - 2x - 15 < 0$.

A. $x < -3$

B. $x < 5$

C. $-3 < x < 5$

D. $x > -3$ or $x > 5$

Solution

$$x^2 - 2x - 15 = (x + 3)(x - 5)$$

Critical points: $x = -3, 5$

Required sign occurs between the roots.

Final Answer

$$-3 < x < 5$$

MCQ 100Solve $x^2 - 12x + 20 > 0$.

A. $2 < x < 10$

B. $x > 2$

C. $x < 10$

D. $x > 10$ or $x < 2$

Solution

$$x^2 - 12x + 20 = (x - 2)(x - 10)$$

Critical points: $x = 2, 10$

Required sign occurs outside the roots.

Final Answer

$$x > 10 \text{ or } x < 2$$

RAPID REVISION GRID | QUADRATICS

Quadratic formula

$$x = \frac{-b \pm \sqrt{D}}{2a}$$

Discriminant

$D > 0$: 2 real, $D = 0$: equal, $D < 0$: no real roots

Sum/product

$$\alpha + \beta = -b/a, \quad \alpha\beta = c/a$$

Equation from roots

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

Linear inequality Negative multiplication/division reverses $<$, $>$, $\leq$, $\geq$.

Quadratic sign For an upward-opening factored quadratic, it is negative between distinct real roots and positive outside.

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