



## MATHS

### BOOKS - UNITED BOOK HOUSE

# Quadratic equation in one variable

#### Exercise

1. Multiple Choice Question (MCQ) If one root of  $ax^2 + bx + c = 0$  is  $\frac{-b + \sqrt{b^2 - 4ac}}{2a}$ , then the other root is  $\frac{-b - \sqrt{b^2 - 4ac}}{2a}$ .

A.  $9ac$

B.  $\frac{9}{2}ac$

C.  $\frac{9}{4}ac$

D.  $3ac$ .

**Answer:**



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2. The roots of the equation

$$ax^2 - bx + c = 0 \text{ are } \dots 1. x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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

A.  $1. x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

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

C.  $3. \frac{-b \pm \sqrt{b^2 - 4ac}}{a}$

D.  $4. \frac{b \pm \sqrt{b^2 - 4ac}}{a}$

**Answer:**



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**3.** If the roots of

$x^2 - (2p + 1)x + (2p - 1) = 0$  are equal in

magnitude but opposite in sign, then the value of P will be

A. -2

B. 2

C.  $1/2$

D.  $-1/2$

**Answer:**



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4. If the two roots of the equation ' $ax^2 + bx + c = 0$ ' are distinct and real then

A.  $b^2 - 4ac = 0$

B.  $b^2 - 4ac < 0$

C.  $b^2 - 4ac > 0$

D.  $b^2 - ac > 0$ .

**Answer:**



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5. The value of  $k$  for which the roots of the equation  $2x^2 + kx + k - 3 = 0$  are reciprocal to each other is

A. 5

B. -5

C. -2

D. 2

**Answer:**



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6. If one root of  $px^2 - 3x - 5 = 0$  is  $5/2$ , then the value of p is

A. -5

B. -2

C. 2

D. 5

**Answer:**



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7. If one root of the equation  $x^2 - ax + b = 0$

be  $\alpha$  and  $\beta$ , then the value of  $\frac{1}{\alpha} + \frac{1}{\beta}$  is

A.  $b/a$

B.  $-a/b$

C.  $a/b$

D.  $-b/a$ .

**Answer:**



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8. If the equation  $(x - 2)(x + 4) + 9 = 0$  be expressed in the form  $ax^2 + bx + c = 0 (a \neq 0)$  then the value of b is

A. -2

B. -1

C. 0

D. 2

**Answer:**



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9. The equation  $2x^8 - 5x^4 + 3 = 0$  is a quadratic with respect to

A.  $x^6$

B.  $x^2$

C.  $x^8$

D.  $x^4$

**Answer:**



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10. If the equation  $(4p + 2)^2 - p(p - 1) = 0$  is expressed in the form  $ap^2 + bp + c = 0$  ( $a \neq 0$ ) then the value of  $a$  is

A. -15

B. -3

C. 15

D. 16

**Answer:**



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11. If the equations  $x^2 + 2x + 3 = 0$  and  $ax^2 + bx + c = 0$  have common root, then  $a : b : c$  is \_\_\_\_\_

A. 1 : 2 : 3

B. 3 : 2 : 1

C. 1 : 3 : 2

D. 3 : 1 : 2

**Answer:**



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12. Let  $a(b - c)x^2 + b(c - a)x + c(a - b) = 0$

has two equal roots. The true relation is \_\_\_\_\_

A.  $1/a + 1/b = 2/c$

B.  $1/a + 1/c = 2/b$

C.  $1/b + 1/c = 2/a$

D. N.O.T.

**Answer:**



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13. The roots of the equation  $ax^2 - bx + c = 0$  are

A.  $b^2 - 4ac \geq 0$

B.  $b^2 - 4ac = 0$

C.  $b^2 - 4ac > 0$

D.  $b^2 - 4ac < 0$

**Answer:**



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14. Sum of two roots of  $2x^2 + ax + 6 = 0$  is 5.

Then the value of a is \_\_\_\_\_

A. -10

B. 10

C.  $5/2$

D.  $-5/2$

**Answer:**



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15. Two roots of  $4x^2 - px + 9 = 0$  are equal.

Then P equals\_\_\_\_\_

A. only 12

B. only -12

C.  $\pm 12$

D. 144

**Answer:**



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16. Two roots of  $5x^2 + 7x + 3 = 0$  are  $\alpha$  and  $\beta$ .

The value of  $\frac{\alpha^3 + \beta^3}{\alpha^{-1} + \beta^{-1}}$  is \_\_\_\_\_

A. 125/12

B. 12/125

C. 282/125

D. - 282/125

**Answer:**



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17. Which among the following is a quadratic equation?

A.  $(2x + 1)^2 = 4x^2 + 4x + 1$

B.  $(\sqrt{3}x + 1)^2 = 3x^2 + 10$

C.  $10x^3 + 2x^2 = 5x(\sqrt{2}x + 1)^2$

D.  $3x^2 - 2x + 10 = 5x^3$

**Answer:**



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18. The sum of two roots of  $x^2 - px + q = 0$  is thrice of their difference. Then which is the correct relation \_\_\_\_\_

A.  $9p^2 = 2q$

B.  $2p^2 = 9q$

C.  $2p^2 + q = 0$

D.  $9p^2 + 2q = 0$

**Answer:**



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19.  $\alpha, \beta$  be the roots of  $x(x - 3) = 4$ . Then

$(\alpha^2 + \beta^2)$  equals\_\_\_\_\_

A. 1

B. 7

C. 25

D. 17

**Answer:**



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20. Two roots of  $x^2 - (a + b)x + ab = 0$  (a, b are rational) are\_\_\_\_\_

- A. not real
- B. real and rational
- C. real & irrational
- D. cannot be determined

**Answer:**



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21. If  $p$  and  $q$  are the two roots of the equation

$$x^2 + px + q = 0, \text{ then find the value of } p \text{ ____}$$

A. 1, 2

B. 2, 3

C. 4, 0

D. 1, 0

**Answer:**



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22. Solve for  $x$  :  $x/x+1 + x+1/x = 34/15$

A.  $2/7, -5/2$

B.  $3/2, -7/2$

C. 9, 4

D. 4, 7

**Answer:**



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23. The hypotenuse of a right angled triangle is 6 cm more than twice the shortest side. If the third side is 2 cm less than the hypotenuse. Find the sides of the triangle\_\_\_

A. 10, 24, 26

B. 4, 6, 8

C. 3, 4, 5

D. 5, 12, 13

**Answer:**



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**24.** A moter boat whose speed is 18 km/hr in still water takes 1 hour more to go 24 km upstream than to return down stream to same spot. Find the speed of steam\_\_\_\_\_

A. 4 km/h

B. 5 km/h

C. 6 km/h

D. 8 km/h

**Answer:**



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25. Find two consecutive numbers whose squares have the sum 85\_\_\_\_\_

A. 6,9

B. 6, 7

C. 6, 8

D. N .O.T

**Answer:**



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26. Solve for  $x$ :  $\sqrt{3}x^2 - 2\sqrt{2}x - 2\sqrt{3} = 0$

A.  $\sqrt{6}, -\frac{\sqrt{6}}{3}$

B.  $\sqrt{3}, 2$

C.  $\sqrt{7}, \sqrt{7}/2$

D.  $\sqrt{6}, \sqrt{3}$

**Answer:**



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27. Solve for  $x$ :  $x^2 + \frac{x}{2} - 1 = 0$

A.  $\frac{-1 \pm \sqrt{19}}{4}$

B.  $\frac{-1 \pm \sqrt{15}}{2}$

C.  $\frac{-1 \pm \sqrt{17}}{2}$

D.  $\frac{-1 \pm \sqrt{17}}{4}$

**Answer:**



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28. Solve for  $Z$ :  $36z^2 - 12cz + (c^2 - d^2) = 0$

A.  $\frac{c \pm d}{2}$

B.  $\frac{c \pm d}{6}$

C.  $\frac{c \pm d}{4}$

D.  $\frac{c \pm d}{3}$

**Answer:**



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29. If  $x = \sqrt{1 + \sqrt{1 + \sqrt{1 + \dots \dots \dots} \alpha}}$ . Then

x is equal to \_\_\_\_\_

A.  $\frac{1 \pm \sqrt{5}}{2}$

B.  $\frac{1 - \sqrt{5}}{2}$

C.  $\frac{1 + \sqrt{5}}{2}$

D. N.O.T.

**Answer:**



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**30.** 300 marbels are distributed equally among a certain number of students. Had there been 10 more students, each would have received

one marbel less. Find the number of students\_\_\_\_\_

A. 40

B. 50

C. 60

D. 70

**Answer:**



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