

1.4: Solving Quadratic Equations

1. If the quadratic equation $2x^2 + 16x + 30 = 0$ is written in the form $(x - a)^2 = b$, then $a + b =$

A) -3

B) -4

C) -2

D) 1

E) 5

2. If $x = a \mp b\sqrt{2}$ are the solutions of the quadratic equation $x^2 - 6x + 7 = 0$, then $a^2 + b^2 =$

A) 10

B) 13

C) 5

D) 25

E) 20

3. If the area of the rectangle below is 21 square feet, then its perimeter in feet, is

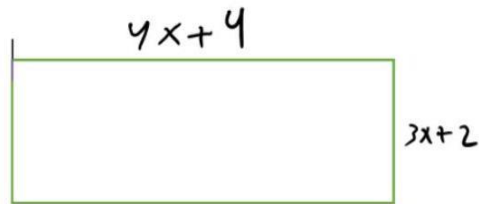
A) 19

B) 30

C) 20

D) 17

E) 32



4. If the quadratic equation $kx^2 - (k - 3)x + 1 = 0$ has two equal solutions, then one possible value of k , is

A) 9

B) -1

C) -9

D) -10

E) 10

5. If **4** is the sum and **1** is the product of the solutions of the equation $2x^2 + bx + c = 0$, then $b + c =$

A) -6

B) -10

C) 10

6. If the equation $(\sqrt{2}x + 1)(\sqrt{2}x - 1) + 6x = 1$ is written in the form $(x - a)^2 = b$, then $a + b =$

A) $\frac{7}{4}$

B) $\frac{19}{4}$

C) $\frac{\sqrt{13}}{2}$

D) $\frac{3}{4}$

E) $\frac{\sqrt{13}}{4}$

7. The quadratic equation $ax^2 - 7x + c = 0$ has sum of solutions $7/6$ and product of solutions $-1/2$. The value of $a + c$ is

A) 3

B) -1

C) -2

D) 5

E) -4

8. If $1 + \sqrt{2}$ and $1 - \sqrt{2}$ are the solutions of the quadratic equation $x^2 + bx + c = 0$, then $b + c =$

A) -3

B) -1

C) $-2 + 2\sqrt{2}$

D) 1

E) 2

9. If the equation $(3x - 4)(x + 1) = -2$ is written in the form: $(x + m)^2 = n$ then $m + n =$

A) 19/36

B) $-2/3$

C) -1

D) 35/36

E) 1

10. If the discriminant of the quadratic equation $2x^2 + (3/5)x = k$ is $49/25$, where k is a constant, then the solution set of the equation contains

A) one positive and one negative rational number

B) two positive irrational numbers

C) two positive rational numbers

D) two negative rational numbers

E) two negative irrational numbers

11. If the sum of squares of three consecutive positive integers a , b and c is 149, then $a + b + c$ is equal to

A) 21

B) 30

C) 24

D) 15

E) 27

12. If the shorter sides of a right triangle have lengths k and $2k + 2$ and if the hypotenuse has length $k + 8$, then the value of $3k + 1$ is equal to:

A) 16

B) 10

C) 46

D) 4

E) -8

13. If the discriminant of the equation $\sqrt{2}x^2 + kx + \frac{\sqrt{2}}{5} = 0$ is equal to $\frac{8}{45}$, then a possible value of k is

A) $\frac{4}{3}$

B) $\frac{2}{3}$

14. The value of k for which the quadratic equation $kx^2 + 3kx + (2k + 1) = 0$ has two equal solutions is:

A) 4

B) 0

C) -4

D) 1

E) 2

15. If the sum and the product of the two roots of the equation $2x^2 + bx + c = 0$ are -4 , and $-\frac{3}{2}$ respectively, then $b + c$ is equal to

A) 5

16. If the equation $-3x^2 + 6x + 5 = 0$ is written in the form $(x - a)^2 = b$, then $a + b =$

A) $\frac{11}{3}$

17. When completing the square in the equation $9x^2 - 12x + 9 = 0$, we get $(x + a)^2 = b$, then $b - a^2$ is equal to:

A) -1

18. If completing the square in the equation $4x(x - 2) = b$, we get $(x - a)^2 = 3$, then $a + b =$

A) 9

B) 3

C) 2

D) 7

E) 5

19. When completing the square in the equation $3x(x - 4) + 6 = 0$, we get $(x + a)^2 = b$, then $a + b =$

A) 10

B) 4

C) -8

D) 0

20. If $x_1 < x_2$ are the solutions of the equation $6x(1 - x) = x + 1$, then $6x_1 - 2x_2 =$

A) 1

B) 0

21. If $x = \frac{1}{2}$ is one of the solutions of the quadratic equation $2x^2 + x + k = 0$, then the other solution is

A) -1

B) 1

C) 2

D) -2

E) 0

22. A farmer has a rectangular garden plot surrounded by 30 m of fence. If the area of the garden is 36 m^2 , then the dimensions of the garden are

A) 3m and 12m

B) 4m and 11m

C) 4 m and 9 m

D) 5 m and 10 m

E) 6 m and 6 m

23. The length of a rectangle is one meter more than twice the width. If the area of the rectangle is 6 square meters, then its length in meters is

A) 4

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24. If $16x^2 + 36a^4 - 48a^2x = 9$, then one value of x is equal to

A) $\frac{3}{4}(2a^2 - 1)$

B) $\frac{3}{2}(2a^2 - 1)$

C) $\frac{1}{2}(2a^2 + 1)$

D) $\frac{1}{4}(2a^2 + 1)$

E) $3(2a^2 + 1)$