

Quadratic Equations

Assignment

1. Solve the following equation and give your answer up to decimal places: $x^2 - 5x - 10 = 0$.
2. If one of the roots of the quadratic equation $px^2 + 15x - 14 = 0$ is $\frac{2}{3}$, find the:
(i) value of p, and (ii) other root.
3. Determine whether the given quadratic equation has real roots, if so, find the roots, if so, the roots $6x^2 + x - 2 = 0$.
4. By increasing the speed of a car by 10 km/h, the time off journey for a distance of 72 km is reduced by 36 minutes. Find the original speed of the car.
5. Find the values of m, so that the equation $(m - 4)x^2 + 2(m - 4)x + 4 = 0$ has equal roots.
6. Find the value of 'K' for which $x = 3$ is a solution of the quadratic equation, $(K + 2)x^2 - Kx + 6 = 0$. Thus find the other root of the equation.
7. Solve for x using the quadratic formula. Write your answer correct to two significant figures. $(x - 1)^2 + 4 = 0$.
8. Without solving the following quadratic equation, find the value of 'm' for which the given equation has real and equal roots. $x^2 + 2(m - 1)x + (x + 5) = 0$.
9. A car covers a distance of 400 km at a certain speed. Had the speed 12 km/h more, the time taken for the journey would have been 1 hour 40 minutes less. Find the original speed of the car.
10. Five year ago, a woman's age was the square of her son's age. Ten years hence her age will be twice that of her son's age. Find:
(i) the age of the son five years ago.
(ii) the present age of the woman.
11. Solve the following equation: $9x^2 - 24x = -16$
12. solve the following equation: $\sqrt{3x^2 + x + 5} = x - 3$.
13. A train covers a distance of 600 km at x km/h. Had the speed been $(x + 20)$ km/h, the time taken to cover the distance would have been reduced by 5 hours. Write down an equation in x and solve it to evaluate x.
14. An express train makes a run of 240km at a certain speed. Another train, whose speed is 12 km/h less takes an hour longer to make the same trip. Find the speed of the express train in km/h.
15. Find the value of m for which equations have real roots
(i) $mx^2 + 3x + 2 = 0$
(ii) $3x^2 - mx + 5 = 0$

Answer

1. hence, $x = 6.53$ and -1.53 2. 9 3. Hence the two roots are $\frac{1}{2}$ and $-\frac{2}{3}$
4. 30km/h 5. Hence the value of m are 8 and 4. 6. -1 7. $x = 3.6, 1.4$
8. hence the value of m are -1 and 4 9. 48kmh^{-1} . 10. (i) 5 years (ii) 30 years
11. $\frac{4}{3}$ and $\frac{4}{3}$ 12. -4 and $\frac{1}{2}$ 13. $x = 40$ 14. 60 km/h
15. (i) $m \leq \frac{9}{8}$ (ii) $m \leq -2\sqrt{15}$ or $m \geq 2\sqrt{15}$

SMVA