

Latex Assignment1

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Example:-1-18 (10.4)

1. Represent the following situation mathematically:
 - (i) John and Jevanti together have 45 marbles. Both of them lost 5 marbles each, and the product of the number of marbles they now have is 124. We would like to find out how many marbles they had to start with.
 - (ii) A cottage industry produces a certain number of toys a day. The cost of production of each toy (in Rupees) was found to be 55 minus the number of toys produced in a day. On a particular day, the total cost of production was ₹ 750. We would like to find out the number of toys produced on that day.
2. Check whether the following are quadratic equations:
 - (i) $(x - 2)^2 + 1 = 2x - 3$
 - (ii) $x(x + 1) + 8 = (x + 2)(x - 2)$
 - (iii) $x(2x + 3) = X^2 + 1$
 - (iv) $(x + 2)^3 = x^3 - 4$
3. Find the roots of the equation $2x^2 - 5x + 3 = 0$ by factorisation.
4. Find the roots of the quadratic equation $6x^2 - x - 2 = 0$.
5. Find the roots of the quadratic equation $3x^2 - 2\sqrt{6}x + 2 = 0$
6. Find the dimensions of the prayer hall discussed in Section 4.1. A charity trust decides to build a prayer hall having a carpet area of 300 square metres with its length one metre more than twice its breadth. What should be the length and breadth of the hall?
7. Solve the equation given in Example 3 by the method of completing the square.
8. Find the roots of the equation $5x^2 - 6x - 2 = 0$ by the method of completing the square.
9. Find the roots of $4x^2 + 3x + 5 = 0$ by the method of completing the square.

10. Solve Q.2(i) of exercise 4.1 by using the quadratic formula.
 - (i) The area of a rectangle plot is $528m^2$. The length of the plot (in metres) is one more than twice its breadth. We need to find the length and breadth of the plot.
11. Find two consecutive odd positive integers, sum of whose squares is 290.
12. A rectangular park is to be designed whose breadth is 3 m less than its length. Its area is to be 4 square metres than the area of a park that has already been made in the shape of a isosceles triangle with its base as the breadth of the rectangular park and of altitude 12 m (see Fig. 1). Find its length and breadth.
13. Find the roots of the following quadratic equations, if they exist, using the quadratic formula.
 - (i) $3x^2 - 5x + 2 = 0$
 - (ii) $x^2 + 4x + 5 = 0$
 - (iii) $2x^2 - 2\sqrt{2}x + 1 = 0$
14. Find the roots of the following equations:
 - (i) $x + \frac{1}{x} = 3, x \neq 0$
 - (ii) $\frac{1}{x} - \frac{1}{x-2} = 3, x \neq 0, 2$
15. A motor boat whose speed is 18 km/h in still water takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.
16. Find the discriminant of the quadratic equation $2x^2 - 4x + 3 = 0$, and hence find the nature of its roots.
17. A pole has to be erected at a point on the boundary of a circular park of diameter 1.3 metres in such a way that the difference of its distances from two diametrically opposite fixed gates A and B on the boundary is 7 metres. Is it possible to do so? If yes, at what distances from the two gates should the pole be erected?
18. Find the discriminant of the equation $3x^2 - 2x + \frac{1}{3} = 0$ and hence find the nature of its roots. Find them, if they are real.

