SNS ACADEMY

Probability

10th Standard

Maths

Date : 02-Feb-23

Exam Time : 00:01:00 Hrs

Reg.No. : | | | | | | |

Total Marks : 44

11 x 4 = 44

1) A student scored a total of 32 marks in class tests in mathematics and science. Had he scored 2 marks less in science and 4 more in mathematics, the product of his marks would have been 253. Find his marks in two subjects.

2) The sum of squares of two consecutive even numbers is 340. Find the numbers.

3) The length of the hypotenuse of a right triangle exceeds the length of its base by 2 crn and exceeds twice the length of altitude by 1 cm. Find the length of each side of the triangle.

4) If x = - 2 is a root of the equation $3x^2 + 7x + P = 0$, find the value of k so that the roots of the equation $x^2 + k(4x + k -1) + P = 0$ are equal.

5) In each of the following equations, determine whether the given values are a solution of the given equations or not.

(i) $x^2 - x + 1 = 0$; x = 1, x =-1

(ii) $x^2 + \sqrt{2}x - 4 = 0; x = \sqrt{2}, x = -2\sqrt{2}$

(iii) 2x2 - x + 9 = $x^2 + 4x + 3$; x = 2, x = 3

(iv) $\sqrt{5}x^2 - 8x + 3\sqrt{5} = 0; x = \sqrt{5}, x = \frac{3}{\sqrt{5}}$

(v) $\frac{2x}{x-3} + \frac{1}{2x+3} + \frac{3x+9}{(x-3)(2x+3)}; x = 3, -1$

(vi) $\frac{4}{x} - 3 = \frac{5}{2x+3}; x = 1, x = -2$

(vii) $\sqrt{x+4} = x - 1; x = 3, 1$

(viii) $x^2 + (\sqrt{5} + 1)x + \sqrt{5} = 0, x = 1, -\sqrt{5}$

6) Find the value of p for which the quadratic equation $(p + 1)x^2 - 6(p + 1)x + 3(p + 9) = 0 \ \ p =\neq 1$ has equal roots. Hence find the roots of the equation.

7) For what value of ft does $(k-12)x^2+2(k-12)x+2=0$ have equal roots?

8) In each of the following equations, find the value of unknown constant(s) for which the given value (s) is (are) solution of the equations.

(i) $x^2 - k^2 = 0$, x = 0.3

(ii) $3x^2 + 2ax - 3 = 0; x = \frac{-1}{2}$

(iii) $7x^2 + kx - 3 = 0; x = \frac{2}{3}$

(iv) $kx^2 + \sqrt{2}x - 4 = 0; x = \sqrt{2}$

(v) a^2 + bx + 1 = 0; x = 1, x = 2

(vi) $5x^2 + px + q = 0; x = -2, x = -\frac{1}{5}$

(vii) $ax^2 + bx - 6 = 0; x = \frac{3}{4}, x = -2$

(viii) kx^2 + tx + 1 = 0; x = 02, x = 0.1.

9) Solve for x:

$\frac{x-4}{x-5} + \frac{x-6}{x-7} = \frac{10}{3}, x \neq 5, 7$

10) A factory kept increasing its output by the same percentage every year. Find the percentage, if it is known that the output doubles in the last two years.

11) If the roots of the equation

$(a - b)x^2 + (b - c)x + (c - a) = 0$ are equal, then prove that 2a = b + c

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