Answer on Question#32300 – Math – Algebra

Zeros of the polynomial x^2-px-q=0 are 3 and 2. Find p and q.

Solution.

We have quadratic equation:

$$x^2 - px - q = 0. \qquad (1)$$

Discriminant:

$$D = p^2 + 4q > 0,$$

Because we have two real roots.

These two distinct roots we obtain from

$$x_1 = \frac{p + \sqrt{D}}{2} \; and \; x_2 = \frac{p - \sqrt{D}}{2}. \qquad (2)$$

Substitute 2 and 3 in (2) as the roots of equation (1).

$$3 = \frac{p + \sqrt{D}}{2}, 2 = \frac{p - \sqrt{D}}{2} \rightarrow$$

$$6 - p = \sqrt{D} \; and \; 4 - p = -\sqrt{D} \rightarrow$$

We obtain

$$6 - p = -(4 - p) \rightarrow p = 5$$

From this we have that $\sqrt{D} = 1 \rightarrow D = 1 \rightarrow 25 + 4q = 1 \rightarrow q = -\frac{24}{4} = -6.$

Answer.

$p = 5, q = -6.$