



Factorizations Ex 7.7 Q1

Answer :

To factorise $x^2 + 12x - 45$, we will find two numbers p and q such that $p + q = 12$ and $pq = -45$.

Now,

$$15 + (-3) = 12$$

and

$$15 \times (-3) = -45$$

Splitting the middle term $12x$ in the given quadratic as $-3x + 15x$, we get :

$$\begin{aligned}x^2 + 12x - 45 &= x^2 - 3x + 15x - 45 \\&= (x^2 - 3x) + (15x - 45) \\&= x(x - 3) + 15(x - 3) \\&= (x + 15)(x - 3)\end{aligned}$$

Factorizations Ex 7.7 Q2

Answer :

We have :

$$40 + 3x - x^2$$

$$\Rightarrow -(x^2 - 3x - 40)$$

To factorise $(x^2 - 3x - 40)$, we will find two numbers p and q such that $p + q = -3$ and $pq = -40$.

Now,

$$5 + (-8) = -3$$

and

$$5 \times (-8) = -40$$

Splitting the middle term $-3x$ in the given quadratic as $5x - 8x$, we get :

$$\begin{aligned}40 + 3x - x^2 &= -(x^2 - 3x - 40) \\&= -(x^2 + 5x - 8x - 40) \\&= -[(x^2 + 5x) - (8x + 40)] \\&= -[x(x + 5) - 8(x + 5)] \\&= -(x - 8)(x + 5) \\&= (x + 5)(-x + 8)\end{aligned}$$

Factorizations Ex 7.7 Q3

Answer :

To factorise $a^2 + 3a - 88$, we will find two numbers p and q such that $p + q = 3$ and $pq = -88$.

Now,

$$11 + (-8) = 3$$

and

$$11 \times (-8) = -88$$

Splitting the middle term $3a$ in the given quadratic as $11a - 8a$, we get :

$$\begin{aligned}a^2 + 3a - 88 &= a^2 + 11a - 8a - 88 \\&= (a^2 + 11a) - (8a + 88) \\&= a(a + 11) - 8(a + 11) \\&= (a - 8)(a + 11)\end{aligned}$$

Factorizations Ex 7.7 Q4

Answer :

To factorise $a^2 - 14a - 51$, we will find two numbers p and q such that $p + q = -14$ and $pq = -51$.

Now,

$$3 + (-17) = -14$$

and

$$3 \times (-17) = -51$$

Splitting the middle term $-14a$ in the given quadratic as $3a - 17a$, we get :

$$\begin{aligned} a^2 - 14a - 51 &= a^2 + 3a - 17a - 51 \\ &= (a^2 + 3a) - (17a + 51) \\ &= a(a + 3) - 17(a + 3) \\ &= (a - 17)(a + 3) \end{aligned}$$

Factorizations Ex 7.7 Q5

Answer :

To factorise $x^2 + 14x + 45$, we will find two numbers p and q such that $p + q = 14$ and $pq = 45$.

Now,

$$9 + 5 = 14$$

and

$$9 \times 5 = 45$$

Splitting the middle term $14x$ in the given quadratic as $9x + 5x$, we get :

$$\begin{aligned} x^2 + 14x + 45 &= x^2 + 9x + 5x + 45 \\ &= (x^2 + 9x) + (5x + 45) \\ &= x(x + 9) + 5(x + 9) \\ &= (x + 5)(x + 9) \end{aligned}$$

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