Algebraic Expressions and Identities Ex 6.6 Q17

**Answer :**

(i) We have:

$$(x+y)^2 = x^2 + 2xy + y^2$$
$$\Rightarrow (x+y) = \pm\sqrt{x^2+2xy+y^2}$$
$$\Rightarrow (x+y) = \pm\sqrt{29+2\times 2} \qquad \left(\because x^2+y^2 = 29 \text{ and } xy = 2\right)$$
$$\Rightarrow (x+y) = \pm\sqrt{29+4}$$
$$\Rightarrow (x+y) = \pm\sqrt{33}$$

(ii) We have:

$$(x-y)^2 = x^2 - 2xy + y^2$$
$$\Rightarrow (x-y) = \pm\sqrt{x^2-2xy+y^2}$$
$$\Rightarrow (x+y) = \pm\sqrt{29-2\times 2} \qquad \left(\because x^2+y^2 = 29 \text{ and } xy = 2\right)$$
$$\Rightarrow (x+y) = \pm\sqrt{29-4}$$
$$\Rightarrow (x+y) = \pm\sqrt{25}$$
$$\Rightarrow (x+y) = \pm 5$$

(iii) We have:

$$\left(x^2+y^2\right)^2 = x^4 + 2x^2y^2 + y^4$$
$$\Rightarrow x^4 + y^4 = \left(x^2+y^2\right)^2 - 2x^2y^2$$
$$\Rightarrow x^4 + y^4 = \left(x^2+y^2\right)^2 - 2(xy)^2$$
$$\Rightarrow x^4 + y^4 = 29^2 - 2(2)^2 \qquad \left(\because x^2+y^2 = 29 \text{ and } xy = 2\right)$$
$$\Rightarrow x^4 + y^4 = 841 - 8$$
$$\Rightarrow x^4 + y^4 = 833$$

Algebraic Expressions and Identities Ex 6.6 Q18

**Answer :**

(i) Let us consider the following expression:

$4x^2 - 12x + 7$

The above expression can be written as:

$4x^2 - 12x + 7 = (2x)^2 - 2 \times 2x \times 3 + 7$

It is evident that if $2x$ is considered as the first term and 3 is considered as the second term, 2 is required to be added to the above expression to make it a perfect square. Therefore, 7 must become 9.

Therefore, adding and subtracting 2 in the above expression, we get:

$$\left(4x^2 - 12x + 7\right) + 2 - 2 = \left\{(2x)^2 - 2 \times 2x \times 3 + 7\right\} + 2 - 2$$

$$= \left\{(2x)^2 - 2 \times 2x \times 3 + 9\right\} - 2 = (2x + 3)^2 - 2$$

Thus, the answer is 2.

(ii) Let's consider the following expression:

$4x^2 - 20x + 20$

The above expression can be written as:

*********** END **********