1. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer.

(i) $4x^2-3x+7$

Solution:

The equation $4x^2-3x+7$ can be written as $4x^2-3x^1+7x^0$

Since x is the only variable in the given equation and the powers of x (i.e., 2, 1 and 0) are whole numbers, we can say that the expression $4x^2-3x+7$ is a polynomial in one variable.

(ii) $y^2+\sqrt{2}$

Solution:

The equation $y^2+\sqrt{2}$ can be written as $y^2+\sqrt{2}y^0$

Since y is the only variable in the given equation and the powers of y (i.e., 2 and 0) are whole numbers, we can say that the expression $y^2+\sqrt{2}$ is a polynomial in one variable.

(iii) $3\sqrt{t}+t\sqrt{2}$

Solution:

The equation $3\sqrt{t}+t\sqrt{2}$ can be written as $3t^{1/2}+\sqrt{2}t$

Though, *t* is the only variable in the given equation, the powers of *t* (i.e.,1/2) is not a whole number. Hence, we can say that the expression $3\sqrt{t}+t\sqrt{2}$ is **not** a polynomial in one variable.

(iv) $y+2/y$

Solution:

The equation $y+2/y$ an be written as $y+2y^{-1}$

Though, *y* is the only variable in the given equation, the powers of *y* (i.e.,-1) is not a whole number. Hence, we can say that the expression $y+2/y$ is **not** a polynomial in one variable.

(v) $x^{10}+y^3+t^{50}$

Solution:

Here, in the equation $x^{10}+y^3+t^{50}$

Though, the powers, 10, 3, 50, are whole numbers, there are 3 variables used in the expression

$x^{10}+y^3+t^{50}$. Hence, it is **not** a polynomial in one variable.

2. Write the coefficients of x^2 in each of the following:

(i) $2+x^2+x$

Solution:

The equation $2+x^2+x$ can be written as $2+(1)x^2+x$

We know that, coefficient is the number which multiplies the variable.

Here, the number that multiplies the variable x^2 is 1

, the coefficients of x^2 in $2+x^2+x$ is 1.

(ii) $2-x^2+x^3$

Solution:

The equation $2-x^2+x^3$ can be written as $2+(-1)x^2+x^3$

We know that, coefficient is the number (along with its sign, i.e., − or +) which multiplies the variable.

Here, the number that multiplies the variable x^2 is -1

the coefficients of x^2 in $2-x^2+x^3$ is -1.

(iii) $(/2)x^2+x$

Solution:

The equation $(/2)x^2+x$ can be written as $(/2)x^2 + x$

We know that, coefficient is the number (along with its sign, i.e., − or +) which multiplies the variable.

Here, the number that multiplies the variable x^2 is /2.

the coefficients of x^2 in $(/2)x^2+x$ is /2.

(iii)$\sqrt{2}x-1$

Solution:

The equation $\sqrt{2}x-1$ can be written as $0x^2+\sqrt{2}x-1$ [Since $0x^2$ is 0]

We know that, coefficient is the number (along with its sign, i.e., − or +) which multiplies the variable.

Here, the number that multiplies the variable x^2 is 0

, the coefficients of x^2 in $\sqrt{2}x-1$ is 0.