POLYNOMIALS

ZEROES OF POLYNOMIAL

EXERCISE

Q.1 Verify whether the indicated numbers are zeroes of the polynomial corresponding to them in the following cases :

(i) $p(x) = 3x + 1, x = -\frac{1}{3}$

(ii) $p(x) = (x + 1)(x - 2), x = -1, 2$

(iii) $p(x) = x^2, x = 0$

(iv) $p(x) = \lambda x + m, x = -\frac{m}{\ell}$

(v) $p(x) = 2x + 1, x = \frac{1}{2}$

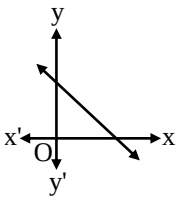
Q.2 Find the zero of the polynomial in each of the following cases :

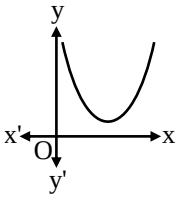
(i) $p(x) = x + 5$

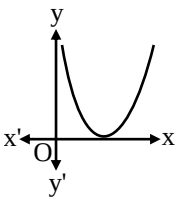
(ii) $p(x) = 2x + 5$

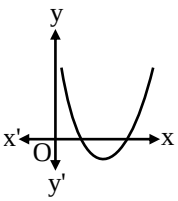
(iii) $p(x) = 3x - 2$

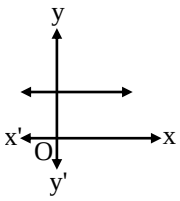
Q.3 Which of the following correspond to the graph to a linear or a quadratic polynomial and find the number of zeroes of polynomial.

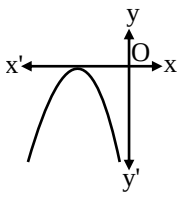
(i) 

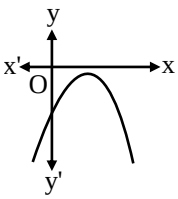
(ii) 

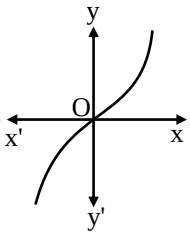
(iii) 

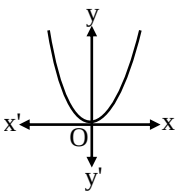
(iv) 

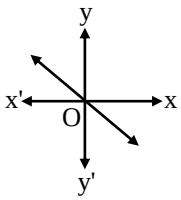
(v) 

(vi) 

(vii) 

(viii) 

(ix) 

(x) 

Q.4: If $f(x) = 3x^3 - 7x^2 + 5x + 2$, find $f(2)$.

Q.5: Show that $x = 1$ is a root of the polynomial $3x^3 - 4x^2 + 7x - 6$

Q.6: If $x = 2$ and $x = 0$ are roots of the polynomial $f(x) = 2x^3 - 5x^2 + cx + d$. Find the values of c and d.

Q.7: Find the integral roots of the polynomial $x^3 - 6x^2 + 11x - 6$.

Q.8: Find the rational roots of the polynomial $2x^3 + 3x^2 - 11x - 6$.

Q.9: Find the zero (root) of the polynomial in each of the following cases:

(i) $f(x) = x - 7$

(ii) $g(x) = 3x + 4$

(iii) $p(x) = 3x$

(iv) $f(x) = cx + d, c \neq 0$

(v) $p(x) = bx, b \neq 0$

ANSWER KEY

1. (i) $x = -\frac{1}{3}$

   (ii) $x = -1$ and $x = 2$

   (iii) $x = 0$

   (iv) $x = -\frac{m}{\ell}$ is

   (v) $x = \frac{1}{2}$

2. (i) $x = -5$

   (ii) $x = -\frac{-5}{2}$

   (iii) $x = \frac{2}{3}$

3. (i) The graph is a straight line so the graph is of a linear polynomial. The number of zeroes is one as the graph intersects the x-axis at one point only.

   (ii) The graph is a parabola. So, this is the graph of quadratic polynomial. The number of zeroes is zero as the graph does not intersect the x-axis.

   (iii) Here the polynomial is quadratic as the graph is a parabola. The number of zeroes is one as the graph intersects the x-axis at one point only (two coincident points).

   (iv) Here, the polynomial is quadratic as the graph is a parabola. The number of zeroes is two as the graph intersects the x-axis at two points.

   (v) The polynomial is linear as the graph is straight line. The number of zeroes is zero as the graph does not intersect the x-axis.

   (vi) The polynomial is quadratic as the graph is a parabola. The number of zeroes is 1 as the graph intersects the x-axis at one point (two coincident points) only.

(vii) The polynomial is quadratic as the graph is a parabola. The number of zeroes is zero, as the graph does not intersect the x-axis.

(viii) Polynomial is neither linear nor quadratic as the graph is neither a straight line nor a parabola is one as the graph intersects the x-axis at one point only.

(ix) Here, the polynomial is quadratic as the graph is a parabola. The number of zeroes is one as the graph intersects the x-axis at one point only (two coincident points).

(x) The polynomial is linear as the graph is a straight line. The number of zeroes is one as the graph intersects the x-axis at only one point.

4. $f(2) = 8$

6. $c = 2$ and $d = 0$

7. integral roots of $f(x)$ are 1, 2, 3.

8. 2, -3 and -1/2 are rational roots of $f(x)$

9. (i) $x = 7$

(ii) $x = -4/3$

(iii) $x = 0$

(iv) $x = -d/c$

(v) $x = 0$