Q1. Classify the following as zero ,constant , linear , quadratic , cubic and biquadratic polynomials :

(i) $x^2 + x$ (ii) $x - x^3$ (iii) $y + y^2 + 4$ (iv) $3t$ (v) r^2 (vi) $7x^3$ (vii) $-7 + x$ (viii) $6y$ (ix) -13

(x) $-z^3$ (xi) $1 - y - y^3$ (xii) $x - x^3 + x^4$ (xiii) $-p$ (xiv) 0 (xv) $\sqrt{7}$ (xvi) $-3x + \frac{1}{2}$

Ans. 1 (i) Quadratic (ii) Cubic (iii) Quadratic (iv) Linear (v) Quadratic (vi) Cubic (vii) Linear (viii) Linear
(ix) Constant   (x) Cubic   (xi) Cubic   (xii) Biquadratic   (xiii) Linear   (xiv) Zero   (xv) Constant   (xvi) Linear

Q2. Give one example of each of the following :

(i) A binomial of degree 35 .   (ii) A monomial of degree 100 .   (iii) A binomial of degree 20 .

(iv) A trinomial of degree 2 .   (v) A monomial of degree 0 .

Q3. Find the value of the following :

(i) $p(x) = 5x^2 - 3x + 7$ at $x = 1$ (ii) $p(x) = 3x^3 - 4x^2 + 7x - 5$ at $x = 3$ and $x = -3$

(iii) $p(x) = 5x - 4x^2 + 3$ at $x = 0$, $x = -1$, $x = 2$ (iv) $q(y) = 3y^3 - 4y + \sqrt{11}$ at $y = 2$

(v) $p(t) = 4t^4 + 5t^3 - t^2 + 6$ at $t = a$

Ans. 3 (i) 9   (ii) 61 , -143 (iii) 3 , -6 , -3 (iv) $16 + \sqrt{11}$ (v) $4a^4 + 5a^3 - a^2 + 6$

Q4. (i) Find $p(0)$, $p(1)$ and $p(2)$ for $p(y) = y^2 - y + 1$.

(ii) Find $p(0)$, $p(1)$ and $p(2)$ for $p(t) = 2 + t + 2t^2 - t^3$.

(iii) Find $p(0)$, $p(1)$ and $p(2)$ for $p(x) = x^3$.   (iv) Find $p(0)$, $p(1)$ and $p(2)$ for $p(x) = (x - 1)(x + 1)$

(v) Find $p(0)$, $p(1)$ and $p(-2)$ for $p(x) = 10x - 4x^2 - 3$

(vi) Find $p(0)$, $p(1)$ and $p(-2)$ for $p(y) = (y + 2)(y - 2)$ (vii) $f(x) = x^2 + \sqrt{2}x + 1$ Find $f(\sqrt{2})$.

(viii) $p(x) = x^2 - 2\sqrt{2}x + 1$ Find $p(2\sqrt{2})$.

Ans. 4 (i) 1 , 1 , 3   (ii) 2 , 4 , 4   (iii) 0 , 1 , 8   (iv) -1 , 0 , 3   (v) -3 , 3 , -39 (vi) -4 , -3 , 0   (vii) 5   (viii) 1

Q5. If $p(x) = x^2 - 4x + 3$, evaluate : $p(2) - p(-1) + p(2)$.   *Ans.* -10

Q6. If $p(x) = x^3 + 3x^2 - 2x + 4$, evaluate : $p(0) + p(1) + p(-2)$.   *Ans.* 22

Q7. If $p(x) = x + 3$, Find $p(x) + p(-x)$.   *Ans.* 6

Q8. Verify whether the following are the zeroes of the following :

(i) $p(x) = 3x + 1$, $x = -\frac{1}{3}$ (ii) $p(x) = 5x - \pi$, $x = \frac{4}{5}$ (iii) $p(x) = x^2 - 1$, $x = 1, -1$

(iv) $p(x) = (x + 1)(x - 2)$, $x = -1, 2$ (v) $p(x) = x^2$, $x = 0$ (vi) $p(x) = lx + m$, $x = \frac{-m}{l}$

(vii) $p(x) = 3x^2 - 1$, $x = \frac{-1}{\sqrt{3}} , \frac{2}{\sqrt{3}}$ (viii) $p(x) = 2x + 1$, $x = \frac{1}{2}$ (ix) $2x^4 + 9x^3 + 11x^2 + 4x - 6$, $x = 1, -3$

Ans. 8 (i) Yes   (ii) No   (iii) Yes   (iv) Yes   (v) Yes   (vi) Yes   (vii) Yes , No   (viii) No   (ix) No , Yes

Q9. Find the zeroes of the following :

(i) $p(x) = x + 5$ (ii) $p(x) = x - 5$ (iii) $p(x) = 2x + 1$ (iv) $p(x) = 2x + 5$ (v) $p(x) = 3 - 6x$

(vi) $p(x) = 3x - 2$ (vii) $h(y) = 2y$ (viii) $p(x) = 3x$ (ix) $p(x) = ax$ (x) $p(x) = cx + d$

(xi) $p(x) = ax + b$

Ans. 9 (i) -5 (ii) 5   (iii) $-\frac{1}{2}$ (iv) $-\frac{5}{2}$ (v) $\frac{1}{2}$ (vi) $\frac{2}{3}$ (vii) 0   (viii) 0   (ix) 0   (x) $-\frac{d}{c}$ (xi) $-\frac{b}{a}$