

Polynomials-Assignment

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

(i) $3x^2 - 2x + 5$ (ii) $3x^{\frac{5}{2}} - 2x + 5$ (iii) $6x^{\frac{4}{2}} - 3x + 4$ (iv) $\sqrt{x} - 2x + 5$ (v) $x - 2\frac{1}{x} + 5$

Q.2: Write the degree of each of the following polynomials:

(i) $9x^5 - 5x^3 + 2x + 5$ (ii) $9t^3 - 5t^2 + 2t + 5$
(iii) $9y + 5$ (iv) 3

Q.3: Find p(0), p(-1) and p(2) for each of the following polynomials:

(i) $p(x) = 9x^5 - 5x^3 + 2x + 5$ (ii) $p(x) = 3x^2 - 2x + 5$
(iii) $p(t) = 9t^3 - 5t^2 + 2t + 5$ (iv) $p(x) = (2x - 3)(x - 2)$

Q.4: Divide the polynomial $x^4 - 10x^3 + 35x^2 - 50x + 24$ by $(x - 4)$ using long division method.

Q.5: Find the remainder obtained on dividing $p(x) = x^3 + 1$ by $x + 1$

Q.6: Find the remainder (Using Remainder Theorem) when $2x^2 - x + 1$ is divided by

(i) $2x + 1$ (ii) x (iii) $x + 1$ (iv) $x - 2$

Q.7: Find the value of k, if $x - 2$ is a factor of $x^3 - 2x^2 + kx - 4$.

Q.8: Factorise $x^3 - 23x^2 + 142x - 120$.

Q.9: Factorise

(A) $x^2 - 9x + 20$
(B) $2x^2 + 3x - 2$
(C) $x^2 - 9x + 18$
(D) $x^2 - 22x + 120$
(E) $x^3 - 3x^2 - 9x - 5$

Q.10: Factorise:

(A) $49a^2 + 70ab + 25b^2$
(B) $\frac{25}{4}x^2 - \frac{x^2}{9}$
(C) $4x^2 + y^2 + z^2 - 4xy - 2yz + 4xz$
(D) $27y^3 + 125z^3$

Q.11: Simplify:

(A) $27x^3 + y^3 + z^3 - 9xyz$
(B) $(101)^3$
(C) $(999)^3$
(D) $(101)(999)$

Q.12: Verify:

$$x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - x)^2 + (z - x)^2]$$

Answer:

1. (i)&(iii)yes, degree is 2(whole Number) (ii),(iv) &(v) No, degree is not whole number

2. 5,3,1,0
3. (i)5,-1,257 (ii)5,10,13 (iii)5,-11,61 (iv)6,15,0
4. $x^3 - 6x^2 + 11x - 6$
5. 0
6. 2,1,4,7
7. 2
8. $(x - 1)(x - 10)(x - 12)$
9. $(x - 4)(x - 5)$, $(2x - 1)(x + 2)$, $(x - 3)(x - 6)$, $(x - 10)(x - 12)$, $(x + 1)^2(x - 5)$
10. $(7a + 5b)(7a + 5b)$, $(\frac{5}{2}x - \frac{y}{3})(\frac{5}{2}x + \frac{y}{3})$, $(2x - y + z)(2x - y + z)$,
 $(3y + 5z)(9y^2 + 25z^2 - 15yz)$
11. $(3x + y + z)(9x^2 + y^2 + z^2 - 3xy - yz - 3zx)$, 1030301, 997002999, 100899

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