EXERCISE 2.1 - Question No. 1

The graphs of $y = p(x)$ are given in Figure below, for some polynomials p(x). Find the number of zeroes of p(x), in each case.

EXERCISE 2.2 - Question No. 1

Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients $t^2 - 15$

EXERCISE 2.2 - Question No. 1

Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients $4u^2 + 8u$

EXERCISE 2.2 - Question No. 1

Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients $3x^2 - x - 4$

EXERCISE 2.2 - Question No. 1

Find the zeroes of the following quadratic polynomials and verify

the relationship between the zeroes and the coefficients

$x^2 - 2x - 8$

EXERCISE 2.2 - Question No. 1

Find the zeroes of the following quadratic polynomials and verify

the relationship between the zeroes and the coefficients

$6x^2 - 3 - 7x$

EXERCISE 2.2 - Question No. 1

Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients

$4s^2 - 4s + 1$

EXERCISE 2.2 - Question No. 1

Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients. - (i)

$x^2 - 2x - 8$ (ii) $4s^2 - 4s + 1$ (iii) $6x^2 - 3 - 7x$ (iv) $4u^2 + 8u$

(v)$t^2 - 15$ (vi) $3x^2 - x - 4$

EXERCISE 2.2 - Question No. 1

Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively. (iv) 1, 1 (v) $-\frac{1}{4}, \frac{1}{4}$ (vi) 4, 1

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EXERCISE 2.2 - Question No. 1

Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively. (i) $\frac{1}{4}, -1$ (ii) $\sqrt{2}, \frac{1}{3}$ (iii) $0, \sqrt{5}$ (iv) 1, 1 (v) $-\frac{1}{4}, \frac{1}{4}$ (vi) 4, 1

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EXERCISE 2.3 - Question No. 1

Divide the polynomial p(x) by the polynomial g(x) and find the

quotient and remainder in each of the following :

$p(x) = x^3 - 3x^2 + 5x - 3, g(x) = x^2 - 2$

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EXERCISE 2.3 - Question No. 1

Divide the polynomial p(x) by the polynomial g(x) and find the

quotient and remainder in each of the following :

$p(x) = x^4 - 3x^2 + 4x + 5, g(x) = x^2 + 1 - x$

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EXERCISE 2.3 - Question No. 1

Divide the polynomial p(x) by the polynomial g(x) and find the quotient and remainder in each of the following :

$p(x) = x^4 - 5x + 6$, $g(x) = 2 - x^2$

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EXERCISE 2.3 - Question No. 2

Check whether the first polynomial is a factor of the second polynomial by dividing the second polynomial by the first polynomial : $t^2 - 3, 2t^4 + 3t^3 - 2t^2 - 9t - 12$

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EXERCISE 2.3 - Question No. 2

Check whether the first polynomial is a factor of the second polynomial by dividing the second polynomial by the first polynomial : $x^3 - 3x + 1, x^5 - 4x^3 + x^2 + 3x + 1$

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EXERCISE 2.3 - Question No. 2

Check whether the first polynomial is a factor of the second polynomial by dividing the second polynomial by the first polynomial : $x^2 + 3x + 1, 3x^4 + 5x^3 - 7x^2 + 2x + 2$

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EXERCISE 2.3 - Question No. 3

Obtain all other zeroes of $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeroes are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$.

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EXERCISE 2.3 - Question No. 4

On dividing $x^3 - 3x^2 + x + 2$ by a polynomial the quotient and remainder were $x - 2$ and $-2x + 4$, respectively. Find g(x).

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EXERCISE 2.3 - Question No. 5

Give examples of polynomials p(x), g(x), g(x) and r(x), which satisfy the division algorithm and (i) $degp(x) = degq(x)$ (ii) $degq(x) = degr(x)$ (iii) $degr(x) = 0$

EXERCISE 2.4 - Question No. 1

Verify that the numbers given alongside of the cubic polynomials below are their zeroes. Also verify the relationship between the zeroes and the coefficients in each case: (i) $2x^3 + x^2 - 5x + 2;$ $\frac{1}{2}, 1, -2$ (ii) $x^3 - 4x^2 + 5x - 2;$ `2,\ 1,\

EXERCISE 2.4 - Question No. 2

Find a cubic polynomial with the sum, sum of the product of its zeroes taken two at a time, and the product of its zeroes as $2,\ 7,\ 14$ respectively.

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EXERCISE 2.4 - Question No. 3

If the zeroes of the polynomial $x^3 - 3x^2 + x + 1$ are $a - b, a, a + b$, find a and b.

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EXERCISE 2.4 - Question No. 4

If two zeroes of the polynomial $x^4 - 6x^3 - 26x^2 + 138x - 35$ are $2 \pm \sqrt{3}$, find other zeroes.

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EXERCISE 2.4 - Question No. 5

If the polynomial $x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by another polynomial $x^2 - 2x + k$, the remainder copies out to be $x + a$. find k and a.

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SOLVED EXAMPLES - Question No. 1

Look at the graphs in Figure given below. Each is the graph of $y = p(x)$, where p(x) is a polynomial. For each of the graphs, find the number of zeroes of p(x).

SOLVED EXAMPLES - Question No. 2

Find the zeroes of the quadratic polynomial $x^2 + 7x + 10,$ and verify the relationship between the zeroes and the coefficients.

SOLVED EXAMPLES - Question No. 3

Find the zeroes of the polynomial $x^2 - 3$ and verify the relationship between the zeroes and the coefficients.

SOLVED EXAMPLES - Question No. 4

Find a quadratic polynomial, the sum and product of whose zeroes are -3 and 2, respectively.

SOLVED EXAMPLES - Question No. 5

Verify that $3,\ 1,\ -\frac{1}{3}$ are the zeroes of the cubic polynomial $p(x) = 3x^3 - 5x^2 - 11x - 3$, and then verify the relationship between the zeroes and the coefficients.

SOLVED EXAMPLES - Question No. 6

Divide $2x^2 + 3x + 1$ by $x + 2$

SOLVED EXAMPLES - Question No. 7

Divide $3x^3 + x^2 + 2x + 5$ by $1 + 2x + x^2$.

SOLVED EXAMPLES - Question No. 8

Divide $3x^2 + x^3 - 3x + 5$ by $x - 1 - x^2$, and verify the division algorithm.

SOLVED EXAMPLES - Question No. 9

Find all the zeroes of $2x^4 - 3x^3 - 3x^2 + 6x - 2$, if you know that two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$.