RS Aggarwal Solutions for Class 10 Maths Chapter 2 Exercise 2.2: We offer a free PDF download of the expert mathematics teachers' solutions to RS Aggarwal Solutions Class 10 Chapter 2 - Polynomials (Ex 2B) Exercise 2.2. For Class 10 Maths RS Aggarwal, all Ex 2.2 Questions and Answers are provided to assist you in reviewing the entire syllabus and getting higher grades.

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RS Aggarwal Solutions for Class 10 Maths Chapter 2 Exercise 2.2 Overview

Students in Class 10 Mathematics must be more careful with their study than in other classes. Because the board exams that students will take will play a significant role in determining the kind of job they wish to pursue. It is always advised that the students in this class practice as many questions as they can to fully prepare for any given subject. Each chapter on the board test is equally crucial and calls for some practice. Here we have provided RS Aggarwal Solutions for Class 10 Maths Chapter 2 Exercise 2.2 step by step solutions.

Students compile questions from publications written by multiple writers. Among these well-known writers is R S Aggarwal, whose books have several practice questions for each chapter covering the material covered in every maths lecture. For Class 10, the questions in this book are both statistically and qualitatively excellent.

RS Aggarwal Solutions for Class 10 Maths Chapter 2 Exercise 2.2

Question 1 :

Solution : It is given that,

p (x) = $x^3 - 2x^2 - 5x + 6$

As we know, 3, -2 and 1 are the zeros of the given polynomial

∴ p (3) = $(3)^3 - 2(3)^2 - 5(3) + 6$

= 27 – 18 – 15 + 6

= 33 – 33

= 0

p (-2) = $(-2)^3 - 2(-2)^2 - 5(-2) + 6$

= -8 – 8 + 10 + 6

= - 16 + 16

= 0

And, p (1) = $(1)^3 - 2(1)^2 - 5(1) + 6$

= 1 – 2 – 5 + 6

= 7 – 7

= 0

Verification of the relation is as follows:

Let us assume $\alpha = 3$, $\beta = -2$ and $\gamma = 1$

Question 2 :

Solution : Given in the question that,

p (x) = $3x^3 - 10x^2 - 27x + 10$

Also, 5, -2 and $\frac{1}{3}$ are the zeros of the given polynomial

$\therefore$ p (5) = $3(5)^3 - 10(5)^2 - 27(5) + 10$

= 3 × 125 – 250 – 135 + 10

= 385 – 385

= 0

p (-2) = $3(-2)^3 - 10(-2)^2 - 27(-2) + 10$

= - 24 – 40 + 54 + 10

= - 64 + 64

= 0

And, p $(\frac{1}{3})$ = $3(\frac{1}{3})^3 - 10(\frac{1}{3})^2 - 21(\frac{1}{3}) + 10$

$= \frac{1}{8} - \frac{10}{9} - 9 + 10$

$= \frac{1}{9} - \frac{10}{9} - 9 + 10$

$= \frac{1}{9} - \frac{10}{9} + 1$

$= \frac{1}{9} - \frac{1}{9}$

Question 3 :

Solution : Let the zeros of the polynomial be a, b and c

Where a = 2, b = - 3 and c = 4

The cubic polynomial can be calculated as follows:

$x^3 – (a + b + c)\ x^2 + (ab + bc + ca)x – abc$

Putting the values of a, b and c in the above equation we get:

$= x^3 – (2 – 3 + 4)\ x^2 + (-6 – 12 + 8)\ x – (- 24)$

$= x^3 – 3x^2 – 10x + 24$

Question 4 :

Solution : Assuming that zeros of the polynomial be a, b and c

Given that a = 1/2, b = 1 and c = - 3

The cubic polynomial can be calculated as follows:

$x^3 – (a + b + c)\ x^2 + (ab + bc + ca)\ x – abc$

Putting the values of a, b and c in the above equation we get:

$= x^3 – (1/2 + 1 - 3)\ x^2 + (1/2 – 3 – 3/2)x – (- 3/2)$

$= x^3 – (-3/2)\ x^2 – 4x + 3/2$

$= 2x^3 + 3x^2 – 8x + 3$

Question 5 :

Solution : cubic polynomial can be calculated

x^3 – (Sum of the zeros) x^2 + (Sum of the product of the zeros taking two at a time)

x – Product of Zeros

It is given that, product of the zeros are 5, -2 and – 24 respectively

Putting these values in the equation, we get:

$x^3 - 5x^2 - 2x + 24$

Question 6 :

Solution : It is given in the question that,

f (x) = $x^3 - 3x^2 + 5x - 3$

And, g (x) = $x^2 - 2$

$$
\begin{array}{r|l}
 & x-3 \\
x-2 & x^3-3x^2+5x-3 \\
 & x^3 \quad\quad -2x \\
 & - \quad\quad\quad + \\
\hline
 & -3x^2+7x-3 \\
 & -3x^2 \quad\quad +6 \\
 & + \quad\quad\quad - \\
\hline
 & 7x-9
\end{array}
$$

Therefor

Quotient q (x) = x – 3

Remainder r (x) = 7x – 9

Question 7 :

Solution : It is given in the question that,

f (x) = $x^4 - 3x^2 + 4x + 5$

And, g (x) = $x^2 + 1 - x$

$$
\begin{array}{r|l}
 & x^2 + x - 3 \\
x^2 - x + 1 & x^4 + 0x^3 - 3x^2 + 4x + 5 \\
 & x^4 - x^3 + x^2 \\
 & - \quad + \quad - \\
\hline
 & x^3 + 4x^2 + 4x + 5 \\
 & x^3 - x^2 + x \\
 & - \quad + \quad - \\
\hline
 & -3x^2 + 3x + 5 \\
 & -3x^2 + 3x - 3 \\
 & + \quad - \quad + \\
\hline
 & 8
\end{array}
$$

So, Quotient q (x) = $x^2 + x - 3$

Remainder r (x) = 8

Question 8 :

Solution :

f (x) = $x^4 - 5x + 6 = x^4 + 0x^3 + 0x^2 - 5x + 6$

And, g (x) = $x^2 + 1 - x$

$$
\begin{array}{r}
-x^2-2 \\
-x^2+2\overline{\big)\,x^4+0x^3+0x^2-5x+6} \\
x^4 \qquad -2x^2 \qquad\qquad\quad \\
- \qquad\quad + \qquad\qquad\qquad \\
\hline
2x^2-5x+6 \\
2x^2 \qquad -4 \\
- \qquad\quad + \\
\hline
-5x+10
\end{array}
$$

So, Quotient q (x) = $x^2 - 2$

Remainder r (x) = 5x + 10

Question 9 :

Solution : Given that

f (x) = $2x^4 + 3x^3 - 2x^2 - 9x - 12$

And, g (x) = $x^3 - 3$

$$
\begin{array}{r l}
 & 2x^2 + 3x + 4 \\
x^2 - 3 \,\big)\!\! & \overline{2x^4 + 3x^3 - 2x^2 - 9x - 12} \\
 & 2x^4 \qquad\quad - 6x^2 \\
 & - \qquad\qquad + \\
\hline
 & \qquad 3x^3 + 4x^2 - 9x - 12 \\
 & \qquad 3x^3 \qquad\quad - 9x \\
 & \qquad - \qquad\qquad + \\
\hline
 & \qquad\qquad 4x^2 \qquad - 12 \\
 & \qquad\qquad 4x^2 \qquad - 12 \\
 & \qquad\qquad - \qquad\quad + \\
\hline
 & \qquad\qquad\qquad 0
\end{array}
$$

Quotient q (x) = $2x^2 + 3x + 4$

Remainder r (x) = 0

Because the remainder is 0

$\therefore$ $x^2 - 3$ is a factor of $2x^4 + 3x^3 - 2x^2 - 9x - 12$

Question 10 :

Solution : According to the division rule, we have

Dividend = Quotient × Divisor + Remainder

Dividend = $3x^3 + x^2 + 2x + 5$

Quotient = $3x - 5$

Remainder = $9x + 10$

Putting these values in the formula, we get

$3x^3 + x^2 + 2x + 5 = 3x – 5 \times g(x) + 9x + 10$

$3x^3 + x^2 + 2x + 5 – 9x – 10 = (3x – 5) \times g(x)$

$3x^3 + x^2 – 7x – 5 = (3x – 5) \times g(x)$

$g(x) = \frac{3x3 + x2 - 7x - 5}{3x - 5}$

$$
\begin{array}{r}
x^2 + 2x + 1 \\
3x - 5 \overline{) 3x^3 + x^2 - 7x - 5} \\
3x^3 - 5x^2 \\
- \quad + \\
\hline
6x^2 - 7x - 5 \\
6x^2 - 10x \\
- \quad + \\
\hline
3x - 5 \\
3x - 5 \\
- \quad + \\
\hline
0
\end{array}
$$

$\therefore g(x) = x^2 + 2x + 1$

Question 11 :

Solution :

$f(x) = -6x^3 + x^2 + 20x + 8$

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

$$
\begin{array}{r}
x^2+2x+1 \\
-3x^2+5x+2\overline{)\,-6x^3+x^2+20x+8} \\
-6x^3+10x^2+4x \\
+\quad -\quad - \\
\hline
-9x^2+16x+8 \\
-9x^2+15x+6 \\
+\quad -\quad - \\
\hline
x+12
\end{array}
$$

∴ Quotient = 2x + 3

Remainder = x + 2

Dividend = Quotient × Divisor + Remainder

Putting the values in the above formula, we get:

$-6x^3 + x^2 + 20x + 8 = (-3x^2 + 5x + 2)(2x + 3) + (x + 2)$

$-6x^3 + x^2 + 20x + 8 = -6x^3 + 10x^2 + 4x - 9x^2 + 15x + 6 + x + 2$

$-6x^3 + x^2 + 20x + 8 = -6x^3 + x^2 + 20x + 8$

Question 12 :

Solution : $f(x) = x^3 + 2x^2 - 11x - 12$

Given that, -1 is a zero of the polynomial

∴ $(x + 1)$ is a factor of $f(x)$

Now on dividing f (x) by (x + 1), we get

$$\begin{array}{r|l} & x^2 + x + 12 \\ \hline x+1 & x^3 + 2x^2 - 11x - 12 \\ & x^3 + x^2 \\ & - \quad - \\ \hline & x^2 - 11x - 12 \\ & x^2 + x \\ & - \quad - \\ \hline & -12x - 12 \\ & -12x - 12 \\ & + \quad + \\ \hline & 0 \end{array}$$

f (x) = $x^3 + 2x^2 - 11x - 12$

= $(x + 1)(x^2 + x - 12)$

= $(x + 1)\{x^2 + 4x - 3x - 12\}$

= $(x + 1)\{x(x + 4) - 3(x + 4)\}$

= $(x + 1)(x - 3)(x + 4)$

Question 13 :

Solution : f (x) = $x^3 - 4x^2 - 7x + 10$

Because 1 and – 2 are the zeros of the given polynomial therefore each one of (x – 1) and (x + 2) is a factor of f (x)

Now, (x – 1) (x + 2) = ($x^2 + x - 2$) is a factor of f (x)

Now, on dividing f (x) by ($x^2 + x - 2$) we get:

$$
\begin{array}{r|l}
 & x - 5 \\
x^2 + x - 2 & x^3 - 4x^2 - 7x + 10 \\
 & x^3 + x^2 - 2x \\
 & -\quad -\quad + \\
\hline
 & -5x^2 - 5x + 10 \\
 & -5x^2 - 5x + 10 \\
 & +\quad +\quad - \\
\hline
 & 0
\end{array}
$$

f (x) = 0

Question 14 :

Solution : $f(x) = x^4 + x^3 - 11x^2 - 9x + 18$

Given 3 and – 3 are the zeros of the given polynomial therefore each one of (x + 3) and (x - 3) is a factor of f (x)

$(x - 3)(x + 3) = (x^2 - 9)$ is a factor of f (x)

on dividing f (x) by $(x^2 - 9)$

$$
\begin{array}{r|l}
 & x^2 + x - 2 \\
\hline
x^2 - 9 & x^4 + x^3 - 11x^2 - 9x + 18 \\
 & x^4 \quad\quad -9x^2 \\
 & - \quad\quad\quad + \\
\hline
 & x^3 - 2x^2 - 9x + 18 \\
 & x^3 \quad\quad\quad -9x \\
 & - \quad\quad\quad + \\
\hline
 & -2x^2 + 18 \\
 & -2x^2 + 18 \\
 & + \quad\quad - \\
\hline
 & 0
\end{array}
$$

Question 15 :

Solution : $f(x) = x^4 + x^3 - 34x^2 - 4x + 120$

Because 2 and – 2 are the zeros of the given polynomial therefore each one of (x - 2) and (x + 2) is a factor of f (x)

(x – 3) (x + 3) = (x^2 – 4) is a factor of f (x)

Now, on dividing f (x) by (x^2 – 4)

$$
\begin{array}{r|l}
 & x^2 + x - 2 \\
\hline
x^2 - 4 & x^4 + x^3 - 34x^2 - 4x + 120 \\
 & x^4 \quad -4x^2 \\
 & - \quad\quad + \\
\hline
 & x^3 - 30x^2 - 4x + 120 \\
 & x^3 \quad\quad -4x \\
 & - \quad\quad\quad + \\
\hline
 & -30x^2 + 120 \\
 & -30x^2 + 120 \\
 & + \quad\quad - \\
\hline
 & 0
\end{array}
$$

f (x) = 0

(x^2 + x – 30) (x^2 – 4) = 0

(x^2 + 6x – 5x – 30) (x – 2) (x + 2)

[x (x + 6) – 5 (x + 6)] (x – 2) (x + 2)

(x – 5) (x + 6) (x – 2) (x + 2) = 0

∴ x = 5 or x = - 6 or x = 2 or x = - 2

Question 16 :

Solution : $f(x) = x^4 + x^3 - 23x^2 - 3x + 60$

$\sqrt{3}$ and $-\sqrt{3}$ are the zeros of the given polynomial therefore each one of $(x - \sqrt{3})$ and $(x - \sqrt{3})$ is a factor of $f(x)$

Therefor, $(x - \sqrt{3})(x + \sqrt{3}) = (x^2 - 3)$ is a factor of $f(x)$

Now, on dividing $f(x)$ by $(x^2 - 3)$ we get:

$$
\begin{array}{r|l}
 & x^2 + x - 20 \\
\hline
x^2 - 3 & x^4 + x^3 - 23x^2 - 3x + 60 \\
 & x^4 \quad -3x^2 \\
 & - \quad\quad + \\
\hline
 & x^3 - 20x^2 - 3x + 60 \\
 & x^3 \quad\quad -3x \\
 & - \quad\quad\quad + \\
\hline
 & -20x^2 + 60 \\
 & -20x^2 + 60 \\
 & + \quad\quad - \\
\hline
 & 0
\end{array}
$$

$f(x) = 0$

$(x^2 + x - 20)(x^2 - 3) = 0$

$(x^2 + 5x - 4x - 20)(x^2 - 3)$

$[x(x + 5) - 4(x + 5)](x^2 - 3)$

$(x - 4)(x + 5)(x - \sqrt{3})(x + \sqrt{3}) = 0$

$\therefore x = 4$ or $x = -5$ or $x = \sqrt{3}$ or $x = -\sqrt{3}$

Question 17 :

Solution : f (x) = $2x^4 - 3x^3 - 5x^2 + 9x - 3$

$\sqrt{3}$ and $-\sqrt{3}$ are the zeros of the given polynomial therefore each one of (x - $\sqrt{3}$) and (x + $\sqrt{3}$) is a factor of f (x)

so, $(x - \sqrt{3})(x + \sqrt{3}) = (x^2 - 3)$ is a factor of f (x)

Now, on dividing f (x) by $(x^2 - 3)$

$$
\begin{array}{r|l}
 & 2x^2 - 3x + 1 \\
x^2 - 3 & 2x^4 - 3x^3 - 5x^2 + 9x - 3 \\
 & 2x^4 \qquad\quad - 6x^2 \\
 & - \qquad\qquad + \\
\hline
 & \qquad -3x^3 + 9x - 3 \\
 & \qquad -3x^3 + 9x \\
 & \qquad + \qquad - \\
\hline
 & \qquad\qquad x^2 - 3 \\
 & \qquad\qquad x^2 - 3 \\
 & \qquad\qquad - \quad + \\
\hline
 & \qquad\qquad 0
\end{array}
$$

Question 18 :

Solution : Let us assume f (x) = $x^4 + 4x^3 - 2x^2 - 20x - 15$

As (x-√5) and (x-√5) are the zeros of the given polynomial therefore each one of (x-√5) and (x + √5) is a factor of f (x)

so, (x-√5) (x + √5) = $(x^2 - 5)$ is a factor of f (x)

Now, on dividing f (x) by $(x^2 - 5)$

$$
\begin{array}{r|l}
 & 2x^2 - 3x + 1 \\
x^2 - 5 & x^4 + 4x^3 - 2x^2 - 20x - 15 \\
 & x^4 \quad - 5x^2 \\
 & - \quad + \\
\hline
 & 4x^3 + 3x^2 - 20x - 15 \\
 & 4x^3 \quad - 20x \\
 & - \quad + \\
\hline
 & 3x^2 - 15 \\
 & 3x^2 - 15 \\
 & - \quad + \\
\hline
 & 0
\end{array}
$$

$(x^2 - 5)(x^2 + 4x + 3) = 0$

(x -√5) (x + √5) (x + 1) (x + 3) = 0

∴ x = √5 or x = - √5 or x = - 1 or x = - 3

Hence, all the zeros of the given polynomial are √5, -√5, - 1 and - 3

Question 19 :

Solution : $f(x) = 2x^4 - 11x^3 + 7x^2 + 13x - 7$

As $(3 + \sqrt{2})$ and $(3 - \sqrt{2})$ are the zeros of the given polynomial therefore each one of $(x + 3 + \sqrt{2})$ and $(x + 3 - \sqrt{2})$ is a factor of f (x)

so, $[(x - (3 + \sqrt{2})][(x - (3 - \sqrt{2})$

$= [(x - 3) - \sqrt{2}]\ [(x - 3) + \sqrt{2}]$

$= [(x - 3)^2 - 2] = x^2 - 6x + 7$ is a factor of f (x)

on dividing f (x) by $(x^2 - 6x + 7)$

$$
\begin{array}{r|l}
 & 2x^2 + x - 1 \\
x^2 - 6x + 7 & 2x^4 - 11x^3 + 7x^2 + 13x - 7 \\
 & 2x^4 - 12x^3 + 14x^2 \\
 & - \quad + \quad - \\
\hline
 & x^3 - 7x^2 + 13x - 7 \\
 & x^3 - 6x^2 + 7x \\
 & - \quad + \quad - \\
\hline
 & -x^2 + 6x - 7 \\
 & -x^2 + 6x - 7 \\
 & + \quad - \quad + \\
\hline
 & 0
\end{array}
$$

$f(x) = 0$

$2x^4 - 11x^3 + 7x^2 + 13x - 7 = 0$

$(x^2 - 6x + 7)(2x^2 + x - 7) = 0$

$(x + 3 + \sqrt{2})(x + 3 - \sqrt{2})(2x - 1)(x + 1) = 0$

$\therefore x = -3 - \sqrt{2}$ or $x = -3 + \sqrt{2}$ or $x = 1/2$ or $x = -1$

Benefits of RS Aggarwal Solutions for Class 10 Maths Chapter 2 Exercise 2.2

RS Aggarwal Solutions for Class 10 Maths Chapter 2 Exercise 2.2 provide several benefits for students studying mathematics at this level. Here are some of the key benefits:

Structured Approach: The solutions follow a structured approach to solving problems, which helps students understand the step-by-step method of solving each type of problem.

Clarity in Concepts: Each solution is detailed and explains the concepts involved clearly. This helps students grasp the underlying mathematical principles better.

Variety of Problems: The exercises in RS Aggarwal Solutions typically cover a wide range of problems, ensuring that students get exposure to different types of questions related to the topic.

Practice and Revision: Regular practice is crucial for mastering mathematics. The solutions provide ample opportunities for students to practice and revise the concepts covered in Chapter 2, Exercise 2.2.

Exam Preparation: By solving these exercises, students can familiarize themselves with the types of questions that may appear in exams. This helps them feel more confident and prepared when facing their tests.

Self-assessment: Students can use the solutions to self-assess their understanding. They can compare their answers with the solutions provided to identify any mistakes and learn from them.

Time Management: Solving problems using these solutions helps students improve their time management skills, which is crucial during examinations.

Foundation for Higher Classes: The concepts taught in Class 10 lay the foundation for higher classes. Understanding these concepts thoroughly with the help of solutions ensures a strong foundation for future studies in mathematics.