Group Members : 1. ______________________

2. ______________________

3. ______________________

Class : ______________________

Date : ______________________

Worksheet of Remainder Theorem

1. Divide $3x^3 + 10x^2 - x - 12$ by $x + 3$

   Solution.

   $x =$

x^3	x^2	x	c

   Quotient :

   Remainder :

2. Divide $2x^3 + 7x^2 - 53x - 28$ by $2x + 1$

   Solution.

   $x =$

x^3	x^2	x	c

   Quotient :

   Remainder :

3. Divide $2x^4 + 5x^3 - x + 8$ by $x^2 + x - 2$

   Solution.

   Divisor $x^2 + x - 2 = (x + a)(x + b)$ *factorization

   $x^2 + x - 2 = (x \qquad)(x \qquad)$

   Using Synthetics Division

   Step 1 : polynomials divided by $(x + a) = (x \qquad)$

   $x =$

x^4	x^3	x^2	x	c

Quotient $Q_1(x) =$

Remainder $R_1 =$

Step 2 : Quotient $Q_1(x) =$ divided by $(x + b) = (x$)

Using Synthetics Division

polynomials divided by $(x$)

	x^3	x^2	x	c
$x =$				

Quotient $Q_2(x) =$

Remainder $R_2 =$

Based on the step 1 and step 2 we obtain that

The quotient is $Q_2(x) =$

The remainder is $(x + a)R_2 + R_1 =$

4. Divide $4x^4 - 7x^2 + x + 2$ by $2x^2 - x + 3$

Solution

Divisor $2x^2 - x + 3 = (x + k)(ax + b)$ *factorization

$2x^2 - x + 3 = (x$ $)(\dots x$ $)$

Using Synthetics Division

Step 1 : polynomials divided by $(x + k) = (x$)

	x^4	x^3	x^2	x	c
$x =$					

Quotient $Q_1(x) =$

Remainder $R_1 =$

Step 2 : Quotient $Q_1(x) =$ divided by $(ax+b) = (\dots x$ $)$
Using Synthetics Division
polynomials divided by $(\dots x$ $)$

	x^3	x^2	x	c
$x =$				

Quotient $Q_2(x) =$

Remainder $R_2 =$

Based on the step 1 and step 2 we obtain that
The quotient is $Q_2(x) =$

The remainder is $(x+k)R_2 + R_1 =$

5. When polynomial $P(x)$ divided by $(x-1)$ and $(x+2)$ the remainders are 8 and -1 respectively. Find the remainder when $P(x)$ is divided by $(x-1)(x+2)$.

Given :
$P(x)$ divided by $(x \dots \dots)$, the remainder is ...
$P(x)$ divided by $(x \dots \dots)$, the remainder is ...
Question : the remainder of $P(x)$ is divided by $(x-1)(x+2)$.
Solution
Remember :

$$P(x) = (x-a)Q(x) + R$$
$$P(x) = (x-a)(x-b)Q(x) + R(x)$$
$$R(x) = ax + b$$