W1 – 2.1 – Long Division of Polynomials and The Remainder Theorem
MHF4U

1) Use the remainder theorem to determine the remainder when $2x^3 + 7x^2 - 8x + 3$ is divided by each binomial.

a) $x + 1$ **b)** $x - 2$ **c)** $x + 3$

2)a) Divide $x^3 + 3x^2 - 2x + 5$ by $x + 1$. Express the result in quotient form.

b) Write the corresponding statement that can be used to check the division.

3) Divide $3x^4 - 4x^3 - 6x^2 + 17x - 8$ by $3x - 4$. Express the result in quotient form.

b) Write the corresponding statement that can be used to check the division.

4) Perform each division. Express the result in quotient form.

a) $x^3 + 7x^2 - 3x + 4$ divided by $x + 2$

b) $6x^3 + x^2 - 14x - 6$ divided by $3x + 2$

c) $10x^3 + 11 - 9x^2 - 8x$ divided by $5x - 2$

d) $11x - 4x^4 - 7$ divided by $x - 3$

e) $6x^3 + x^2 + 7x + 3$ divided by $3x + 2$

f) $8x^3 + 4x^2 - 31$ divided by $2x - 3$

g) $6x^2 - 6 + 8x^3$ divided by $4x - 3$

5) The volume, in cubic cm, of a rectangular box can be modelled by the polynomial expression $2x^3 + 17x^2 + 38x + 15$. Determine possible dimensions of the box if the height, in cm, is given by $x + 5$.

6) Determine the value of k such that when $P(x) = kx^3 + 5x^2 - 2x + 3$ is divided by $x + 1$, the remainder is 7.