Factors of polynomials – 2022 O Level Additional Math

1. June/2022/Paper_12/No.6

The polynomial $p(x) = 6x^3 + ax^2 + 6x + b$, where a and b are integers, is divisible by $2x - 1$. When $p(x)$ is divided by $x - 2$, the remainder is 120.

(a) Find the values of a and b. [4]

(b) Hence write down the remainder when $p(x)$ is divided by x. [1]

(c) Find the value of $p''(0)$. [2]

2. June/2022/Paper_21/No.4

The polynomial $p(x) = mx^3 - 17x^2 + nx + 6$ has a factor $x - 3$. It has a remainder of -12 when divided by $x + 1$. Find the remainder when $p(x)$ is divided by $x - 2$. [6]