**SENIOR MATH OLYMPIAD**

**QUESTION ONE**

(a) The expression 4x3 + 21x – 6 has the same remainder when divided by (x – a) or by (x +b), where a$\ne $ -b, find the value of a2 + b2 –ab. [4]

(b) Find the range of values of x for which the expression 2 – 3x – 2x2 is negative. [3]

(c) Sketch the graph of y = 5 -$\left|3-2x\right|$, for the domain -2$\leq $ x$\leq $ 5. [3]

(d) If $∝and β$ are the roots of the equation x2 -21x + 4 = 0, find the equation whose roots are$ \frac{1}{ α^{2 }} and \frac{1}{β^{2}}$**.** [5]

**END OF SENIOR MATH OLYMPIAD**