Unit 1 – Polynomial and Rational Expressions

Practice Test

Write **very good** solutions to the following problems. Your mathematics needs to be neat, showing your thinking clearly. **Make your work so beautiful** that tears rise to my eyes. Solutions will be posted Thursday evening.

1. Expand and Simplify

a) $(3a-4b)(2a-5ab+3b)$ b) $(3x-5)^2$ c) $(2x+3)^3$

2. Factor by grouping

a) $3m^3-15m^2-2m+10$ b) $x^2-10x+25-4y^2$ *(hint – square minus square: see the video!)*

3. Explain in your own words why we MUST state restrictions on Rational Expressions before doing any cancelling.

4. Simplify the following rational expressions:

a) $\dfrac{x^2-7x-60}{x^2-4}\times\dfrac{14-7x}{(x-12)^2}$ b) $\dfrac{-3x^2+108}{3x^2+2x-5}\times\dfrac{3x^2+x-10}{x^2+8x+12}$

c) $\dfrac{x^2-10x+25}{2x^2-11x+5}\div\dfrac{x^2+7x+12}{2x^2+5x-3}$ d) $\dfrac{2x}{x^2+x-6}+\dfrac{x-4}{x^2+2x-3}$

e) $\dfrac{2}{x^2+4x-60}-\dfrac{3}{x^2-36}$ f) $\dfrac{2x}{x^2-x-2}+\dfrac{x^2+3x-10}{x^2-5x+6}\times\dfrac{3x+12}{x^2+2x-8}$