

Last Name: SOLUTIONS

First Name: _____

Student ID: _____

Quiz 1

Question 1. Factor completely:

$$\begin{aligned}
 \text{(a) (3 marks)} \quad x^3 - 3x^2 - 4x + 12 &= x^2(x-3) - 4(x-3) \\
 &= (x^2 - 4)(x-3) \\
 &= (x+2)(x-2)(x-3)
 \end{aligned}$$

$$\begin{aligned}
 \text{(b) (2 marks)} \quad 27x^3 - 125 &= (3x-5)[(3x)^2 + (3x)(5) + (5)^2] \\
 &= (3x-5)(9x^2 + 15x + 25)
 \end{aligned}$$

Question 2. Solve for x (by factoring):

$$\text{(a) (3 marks)} \quad 8x^3 + 25x = 30x^2$$

$$8x^3 - 30x^2 + 25x = 0$$

$$x(8x^2 - 30x + 25) = 0$$

$$\begin{array}{l}
 d \cdot \beta = 200 \\
 d + \beta = -30 \\
 \alpha = -10 \quad \beta = -20
 \end{array}$$

$$x[8x^2 - 10x - 20x + 25] = 0$$

$$x[2x(4x-5) - 5(4x-5)] = 0$$

$$\rightarrow x(2x-5)(4x-5) = 0$$

$$\therefore x = 0, \frac{5}{2}, \frac{5}{4}$$

$$\text{(b) (2 marks)} \quad 2x^2 = 8x$$

$$2x^2 - 8x = 0$$

$$2x(x-4) = 0$$

$$x = 0, 4$$