King Fahd University of Petroleum and Minerals
Faculty of Science – Per-Year Math Program
Math 001 - Term 051
Recitation hour (P3 & P4)

Please cover at least four questions

Question1

Factor each of the following trinomials

$a) x^2 - 5x - 6 = (x-6)(x+1)$

$b)\ 4x^2 + 10x - 15$ $D = b^2 - 4ac = 100 - 4(4)(-15) = 340 \Rightarrow$ not perfect square $\Rightarrow$ nonfactorable over integers

Question2

Completely factor:

$x^6 + 7x^3 - 8 = (x^3+8)(x^3-1) = (x+2)(x^2-2x+4)(x-1)(x^2+x+1)$

Question3

Factor by grouping:

$a)\ 9x^2 + 3x - y - y^2$

$= (9x^2 - y^2) + (3x - y) = (3x - y)(3x + y) + (3x - y) = (3x - y)(3x + y + 1)$

$b)\ 36x^2 - y^2 - 4yz - 4z^2$

$36x^2 - (y^2 + 4yz + 4z^2) = 36x^2 - (y + 2z)^2 = [6x - y - 2z][6x + y + 2z]$

Question4

Find all positive values of k such that $4x^2 - 12xy + ky^2$ is a perfect-square trinomial.

$(2x)^2 - 2 \cdot 2x \cdot \sqrt{k}\, y + ky^2 \Rightarrow 4\sqrt{k} = 12 \Rightarrow \sqrt{k} = 3 \Rightarrow k = 9$

Question5:

Given the polynomial $(3x-2)^3+(6x-1)^2$

a. write the polynomial in the standard form
b. complete the following table

The leading coefficient	The constant term	The coefficient of x^2 is
27	-7	-18

$$(3x-2)^3+(6x-1)^2 = 27x^3-54x^2+36x-8+36x^2-12x+1$$
$$= 27x^3-18x^2+24x-7$$