

1.) Factor the expression  $x^3 + 5x^2 - 4x - 20$  completely.

$$x^2(x+5) - 4(x+5)$$

$$(x+5)(x^2-4)$$

$$(x+5)(x-2)(x+2)$$

2.) Factor the expression  $x^3 + 4x^2 - 9x - 36$  completely.

$$x^2(x+4) - 9(x+4)$$

$$(x+4)(x^2-9)$$

$$(x+4)(x-3)(x+3)$$

3.) The expression  $x^2(x+2) - (x+2)$  is equivalent to

(a)  $x^2$

(b)  $(x-1)(x+1)$

(c)  $x^3 + 2x^2 - x + 2$

(d)  $(x-1)(x+1)(x+2)$

$$(x+2)(x^2-1)$$

$$(x+2)(x-1)(x+1)$$

4.) Find all the zero's for the expression  $2x^3 - 5x^2 + 18x - 45$

$$x^2(2x-5) + 9(2x-5)$$

$$(2x-5)(x^2+9) = 0$$

$$2x-5=0 \quad x^2+9=0$$

$$2x=5$$

$$x^2 = -9$$

$$x = \frac{5}{2}$$

$$x = \pm\sqrt{-9}$$

$$x = \pm 3i$$

5.) Factor the expression  $x^2 + 3xy + 3x^3 + y$  completely.

$$3x^3 + x^2 + 3xy + y$$

$$x^2(3x+1) + y(3x+1)$$

$$(3x+1)(x^2+y)$$

6.) Factor the expression  $a^2x^2 - 2cx^2 + a^2y - 2cy$  completely.

$$x^2(a^2-2c) + y(a^2-2c)$$

$$(a^2-2c)(x^2+y)$$