

1.1 Factor the following completely:

1.  $2x^2 - 5x$

$2x^2 - 5x = x(2x - 5)$

2.  $x^2 + 2x - 15$

$(x+5)(x-3)$   
 $x^2 + 5x - 3x - 15$   
 $x(x+5) - 3(x+5)$   
 $(x-3)(x+5)$

3.  $3x^2 - 27$

$3x^2 - 27 = 3(x^2 - 9)$   
 $3(x+3)(x-3)$

1.2 Factor the following quadratics by grouping:

1.  $2x^2 + 7x - 4$

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

2.  $x^2 - 2x - 24$

$x^2 - 2x - 24$   
 $x^2 - 6x + 4x - 24$   
 $x(x-6) + 4(x-6)$   
 $(x+4)(x-6)$

3.  $x^2 + 11x + 24$

$x^2 + 11x + 24$   
 $x^2 + 8x + 3x + 24$   
 $x(x+8) + 3(x+8)$   
 $(x+3)(x+8)$

4.  $x^2 - 10x + 24$

$x^2 - 10x + 24$   
 $x^2 - 6x - 4x + 24$   
 $x(x-6) - 4(x-6)$   
 $(x-4)(x-6)$

1.3 Identify the factors of each equation and state the solutions:

1.  $x^2 - 16 = 0$

$(x+4)(x-4) = 0$   
Solutions:  $x = -4, 4$

2.  $x^2 + 5x - 14 = 0$

$(x+7)(x-2) = 0$   
Solutions:  $x = -7, 2$

3.  $x^2 - 10x + 24 = 0$

$(x-4)(x-6) = 0$   
Solutions:  $x = 4, 6$

4.  $x^2 - 11x + 28 = 0$

$(x-4)(x-7) = 0$   
Solutions:  $x = 4, 7$