

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Pre-Calculus 11 HW 4a Factoring Trinomials**

1. Given each pair of binomials, expand and simplify:

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

$x^2 - 3x + 4x - 12$

$x^2 + x - 12$

b.  $(x+11)(x-9)$

$x^2 - 9x + 11x - 99$

$x^2 + 2x - 99$

c.  $(2x+3)(3x-1)$

$6x^2 - 2x + 9x - 3$

$6x^2 + 7x - 3$

e.  $(7x-3)(4x+2)$

$28x^2 - 12x + 14x - 6$

$28x^2 + 2x - 6$

f.  $(10x-3)(4x-2)$

$40x^2 - 12x - 20x + 6$

$40x^2 - 32x + 6$

g.  $(8x-3)(3x-8)$

$24x^2 - 9x - 64x + 24$

$24x^2 - 73x + 24$

2. Given each expression, find the missing value in the box:

a.  $x^2 - 11x - 12 = (x - \boxed{?})(x + 1)$

$? = 12$

b.  $x^2 - 29x + 120 = (x - \boxed{?})(x - 5)$

$? = 24$

c.  $5x^2 + 6x + 1 = (5x + \boxed{?})(x + 1)$

$? = 1$

d.  $2x^2 - 23x + 11 = (2x - \boxed{?})(x - 11)$

$? = 1$

3. Factor each of the following expressions. Show all your steps and work:

a.  $x^2 + 7x + 6$

$(x+6)(x+1)$

b.  $x^2 + 25x + 24$

$(x+1)(x+24)$

c.  $x^2 + 10x + 21$

$(x+3)(x+7)$

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

$(x-6)(x-4)$

e.  $x^2 + 3x - 40$

$(x-5)(x+8)$

f.  $4x^2 + 9x + 2$

$(4x+1)(x+2)$

g.  $2x^2 + 5x + 2$

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

h.  $2x^2 - 11x + 15$

$(2x-5)(x-3)$

i)  $21x^2 + 17x - 30$   
 $(7x - 6)(3x + 5)$

j)  $2x^2 - 7x + 5$   
 Can not be factored

k)  $5x^2 - 13x - 6$   
 $(x - 3)(5x + 2)$

l)  $7x^2 + 9x - 10$   
 $(7x - 5)(x + 2)$

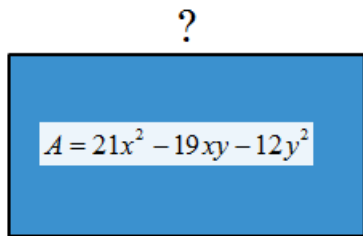
m)  $21 + 26x - 15x^2$   
 $-(3x - 7)(5x + 3)$

n)  $2x^2 - 9xy - 45y^2$   
 $(2x - 15y)(x + 3y)$

o)  $5x^4 - 9x^2 - 2$   
 $(5x^2 + 1)(x^2 - 2)$

p)  $6 - 7x^2 + 2x^4$   
 $(2x^2 - 3)(x^2 - 2)$

4. The area of a rectangle is given by the expression:  $21x^2 - 19xy - 12y^2$  and the width is  $7x + 3y$ . Find the length of the rectangle:



$$21x^2 - 19xy - 12y^2 = (7x + 3y)(ax + by)$$

$$21x^2 = 7x(ax) \quad -12y^2 = 3yb$$

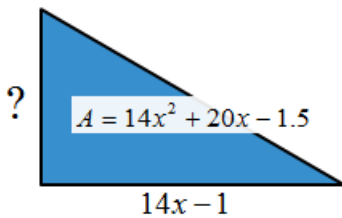
$$\frac{21x^2}{7x} = ax \quad \frac{-12y^2}{3y} = b$$

$$3x = ax \quad -4y = by$$

$$3 = a \quad -4 = b$$

The length of the rectangle will be:  $3x - 4y$

5. The area of a triangle is given by the expression:  $14x^2 + 20x - 1.5$  and the width is  $14x - 1$ . Find the length of the rectangle:



$$\frac{\text{Base} \times \text{Height}}{2} = \text{Area Triangle}$$

$$(14x - 1)H = 2 \times (14x^2 + 20x - 1.5)$$

$$(14x - 1)(ax + b) = 28x^2 + 40x - 3$$

$$14x(ax) = 28x^2 \quad -b = -3$$

$$a = 2 \quad b = 3$$

The height of the triangle will be:  $2x + 3$