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

$?=12$

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

$?=24$

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

$?=1$

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

$?=1$

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) $2x^2-7x+5$
$(2x-5)(x-1)$

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

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

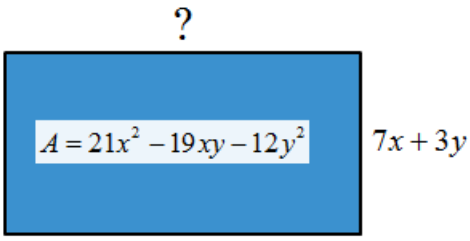
m) $21+26x-15x^2$
$-(3x-7)(5x+3)$

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:




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

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

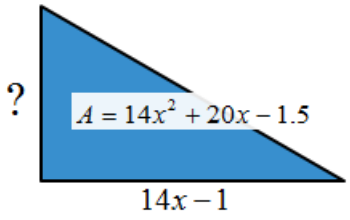
$$\frac{21x^2}{7x}=ax \qquad \frac{-12y^2}{3y}=b$$

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

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

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:




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

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

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

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

$$a=2 \qquad b=3$$

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