Check-up...

Factor each of the following...

a) $x^2 - 13x - 30$

$(x-15)(x+2)$

b) $5x^2 - 6x - 8$ (-40)

$5x^2-10x+4x-8$

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

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

c) $8x^2 + 34x + 30$ (60)

$2(4x^2+17x+15)$

$2\left(\frac{4x}{4}+\frac{12}{4}\right)(4x+5)$

$2(x+3)(4x+5)$

OR

$2(4x^2+12x+5x+15)$

$2(4x(x+3)+5(x+3))$

$2(x+3)(4x+5)$

IV. Difference of Squares:

Conjugate: Same binomials except opposite signs between the terms.

Multiply the conjugates shown below...

$(x+3)(x-3)$ $(5w-4)(5w+4)$ $(4ab-c)(4ab+c)$

$\sqrt{x^2}-\sqrt{9}$

$25w^2+20w-20w-16$

$25w^2-16$

$16a^2b^2+4abc-4abc-c^2$

$16a^2b^2-c^2$

Is there a pattern when a binomial gets multiplied by it's conjugate?

I. Difference of Squares

Criteria...
- two terms that are perfect squares.
- must be a difference
- factor like this...

$$a^2 - b^2 = (a-b)(a+b)$$

EXAMPLES...

1) $81x^2 - 16$

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

2) $196x^2 - 49$

$49(4x^2-1)$

$49(2x-1)(2x+1)$

$(14x-7)(14x+7)$

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

$49(2x-1)(2x+1)$

3) $8x^2 - 18y^2$

4) $81z^4 - 625$

$x^2 - 25$

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

$y^2 - 36$

$(y-6)(y+6)$

Difference of Squares

$9w^2 - 4$

$(3w-2)(3w+2)$

Conjugates

$25x^2 - 1$

$(5x-1)(5x+1)$

$\sqrt{x^2} = (x^2)^{\frac{1}{2}}$

$x^{16} - 1$

$(x^8-1)(x^8+1)$

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

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

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

12

6 $\frac{1}{2}$

3 $\frac{1}{2}$

Let's make things slightly more complicated...

Factor each of the following:

$\sqrt{16-\sqrt{(a-b)^2}}$

$16-(a-b)^2$

$(4-(a-b))(4+(a-b))$

$[4-(a-b)][4+(a-b)]$

$(4-a+b)(4+a-b)$

x^2-9

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

$\sqrt{\left(a^2+12\right)^2-64a^2}$

$\square^2-64a^2$

$((a^2+12)-8a)((a^2+12)+8a)$

$\square-8a)(\square+8a)$

$(a^2-8a+12)(a^2+8a+12)$

$(a-6)(a-2)(a+6)(a+2)$

III. Perfect Square Trinomials:

Square each of the following binomials:

$(x+3)^2$

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

$x^2+3x+3x+9$

x^2+6x+9

x 3

$(5x+4)^2$

$=25x^2+40x+16$

$5x$ 4

$(3x-1)^2$

$9x^2-6x+1$

$3x$ 1

Factor the following trinomial: $9w^2+48w+64$

576

$(3w+8)^2$

How will we reverse this process and FACTOR a perfect square trinomial?

Factor the following trinomial: $25w^2 + 40w + 16$

$(5w+4)^2$

II. Perfect Square Trinomials

Criteria...

- three terms: the first and last are perfect squares.
- $\sqrt{}$ of the first & $\sqrt{}$ of the last then double equals th coefficient of the middle term.
- factors like this...

$$a^2 + 2ab + b^2 = (a + b)^2$$

OR

$$a^2 - 2ab + b^2 = (a - b)^2$$

- recognize them and you save yourself the decomposition steps!!!

EXAMPLES...

1) $25x^2 - 10x + 1$ (5, 1)

$(5x-1)^2$

2) $9x^2 + 24x + 16$ (3x, 4)

$(3x+4)^2$

$25x^2 - 70x + 49$ (5x, 7)

$100w^2 + 60w + 9$

Math 10 Name_____

Factoring: Difference of Squares and Perfect Squares

Date_____

Factor each completely.

1) $n^2 - 9$

2) $25a^2 - 9$

3) $k^2 - 4$

4) $16x^2 - 9$

5) $x^2 - 25$

6) $25x^2 - 16y^2$

7) $u^2 - 16v^2$

8) $u^2 - 9v^2$

9) $4x^2 - y^2$

10) $a^2 - 25b^2$

11) $9m^2 + 12m + 4$

12) $16r^2 + 8r + 1$

13) $25x^2 - 20x + 4$

14) $16n^2 + 40n + 25$

15) $9b^2 - 24b + 16$

16) $16m^2 - 24mn + 9n^2$

17) $9x^2 - 6xy + y^2$

18) $25x^2 + 10xy + y^2$

19) $x^2 - 8xy + 16y^2$

20) $9x^2 + 24xy + 16y^2$

Answers to Factoring: Difference of Squares and Perfect Squares (ID: 1)

1) $(n+3)(n-3)$
2) $(5a+3)(5a-3)$
3) $(k+2)(k-2)$
4) $(4x+3)(4x-3)$
5) $(x+5)(x-5)$
6) $(5x+4y)(5x-4y)$
7) $(u+4v)(u-4v)$
8) $(u+3v)(u-3v)$
9) $(2x+y)(2x-y)$
10) $(a+5b)(a-5b)$
11) $(3m+2)^2$
12) $(4r+1)^2$
13) $(5x-2)^2$
14) $(4n+5)^2$
15) $(3b-4)^2$
16) $(4m-3n)^2$
17) $(3x-y)^2$
18) $(5x+y)^2$
19) $(x-4y)^2$
20) $(3x+4y)^2$

Attachments

Worksheet - Sketching Angles in Radians.doc