

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

Date: \_\_\_\_\_  
Ms. Loughran

Do Now:

Factor each of the following completely.

1.  $25x^2 - 36y^2$

$$(5x - 6y)(5x + 6y)$$

2.  $3x^2 - 5xy - 2y^2$

$$\begin{aligned} & 3x^2 - 6xy + xy - 2y^2 \\ & 3x(x - 2y) + y(x - 2y) \\ & (3x + y)(x - 2y) \end{aligned}$$

multiply to:  $-6x^2y^2$   
add to:  $-5xy$

3.  $-8x^3 + 125$

$$\begin{aligned} & -(8x^3 - 125) \\ & -(2x - 5)(4x^2 + 10x + 25) \end{aligned}$$

4.  $27y^3 + 64x^3$

$$(3y + 4x)(9y^2 - 12xy + 16x^2)$$

Name: \_\_\_\_\_  
PC: Factoring using Substitution

Date: \_\_\_\_\_  
Ms. Loughran

Factor each of the following completely.

1.  $(5a+1)^2 - 2(5a+1) - 3$

$(5a+1)(5a+1)$

$25a^2 + 10a + 1 - 10a - 2 - 3$

$25a^2 - 4$

$(5a-2)(5a+2)$

OR use substitution

let  $x = 5a+1$

$x^2 - 2x - 3$

$(x-3)(x+1)$

$(5a+1-3)(5a+1+1) = (5a-2)(5a+2)$

3.  $(a^2+2a)^2 - 2(a^2+2a) - 3$

let  $x = a^2+2a$

$x^2 - 2x - 3$

$(x-3)(x+1)$

$(a^2+2a-3)(a^2+2a+1)$

$(a-1)(a+3)(a+1)(a+1)$

2.  $(a^2+1)^2 - 7(a^2+1) + 10$

let  $x = a^2+1$

$x^2 - 7x + 10$

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

$(a^2+1-2)(a^2+1-5)$

$(a^2-1)(a^2-4)$

$(a+1)(a-1)(a+2)(a-2)$

4.  $(3x+2)^2 + 8(3x+2) + 12$

let  $y = 3x+2$

$y^2 + 8y + 12$

$(y+6)(y+2)$

$(3x+2+6)(3x+2+2)$

$(3x+8)(3x+4)$

$$5. 2(a+b)^2 + 5(a+b) - 3$$

$$\text{let } y = a+b$$

$$2y^2 + 5y - 3 \quad \begin{array}{l} m: -6 \\ A: 5 \end{array}$$

$$2y^2 + 6y - y - 3$$

$$2y(y+3) - 1(y+3)$$

$$(2y-1)(y+3)$$

$$(2(a+b)-1)(a+b+3)$$

$$(2a+2b-1)(a+b+3)$$

$$6. (a+2)^2 - 12(a+2) + 32$$

$$\text{let } x = a+2$$

$$x^2 - 12x + 32$$

$$(x-4)(x-8)$$

$$(a+2-4)(a+2-8)$$

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

$$7. 3(x+5)^2 + 7(x+5) - 10$$

$$\text{let } y = x+5$$

$$3y^2 + 7y - 10$$

$$3y^2 + 10y - 3y - 10$$

$$y(3y+10) - (3y+10)$$

$$(y-1)(3y+10)$$

$$(x+5-1)(3(x+5)+10)$$

$$(x+4)(3x+15+10)$$

$$(x+4)(3x+25)$$

$$8. x^4 + 4x^2 + 4$$

\* We will continue  
with this sheet  
on Monday \*

# Homework 09-07

Factor each completely.

1)  $x^3 + 125$

$$(x + 5)(x^2 - 5x + 25)$$

2)  $a^3 + 64$

$$(a + 4)(a^2 - 4a + 16)$$

3)  $x^3 - 64$

$$(x - 4)(x^2 + 4x + 16)$$

4)  $u^3 + 8$

$$(u + 2)(u^2 - 2u + 4)$$

5)  $x^3 - 27$

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

6)  $125 - x^3$

$$(5 - x)(25 + 5x + x^2)$$

7)  $1 - a^3$

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

8)  $a^3 + 125$

$$(a + 5)(a^2 - 5a + 25)$$

9)  $x^3 + 27$

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

10)  $x^3 + 1$

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

11)  $8x^3 + 27$

$$(2x + 3)(4x^2 - 6x + 9)$$

12)  $-27u^3 + 125$

$$(-3u + 5)(9u^2 + 15u + 25)$$

$$13) -a^3 - 8$$

$$(-a - 2)(a^2 - 2a + 4)$$

$$14) 250x^4 + 128x$$

$$2x(5x + 4)(25x^2 - 20x + 16)$$

$$15) 648a + 1029a^4$$

$$3a(6 + 7a)(36 - 42a + 49a^2)$$

$$16) 8a^3 + 125$$

$$(2a + 5)(4a^2 - 10a + 25)$$

$$17) 64x^3 + 1$$

$$(4x + 1)(16x^2 - 4x + 1)$$

$$18) 8x^4 + x$$

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

$$19) 343m^3 + 64n^3$$

$$(7m + 4n)(49m^2 - 28mn + 16n^2)$$

$$20) m^3 + 8n^3$$

$$(m + 2n)(m^2 - 2mn + 4n^2)$$

$$21) a^3 + 343b^3$$

$$(a + 7b)(a^2 - 7ab + 49b^2)$$

$$22) x^3 - 216y^3$$

$$(x - 6y)(x^2 + 6xy + 36y^2)$$

$$23) 1029yx^3 + 24y^4$$

$$3y(7x + 2y)(49x^2 - 14xy + 4y^2)$$

$$24) m^3 + 64n^3$$

$$(m + 4n)(m^2 - 4mn + 16n^2)$$