

Name: _____
PC

Date: _____
Ms. Loughran

1. Factor completely:

$$(x+3)^2 - 2(x+3) - 8$$

$$\begin{aligned} \text{let } y &= x+3 \\ y^2 - 2y - 8 \\ (y-4)(y+2) \\ (x+3-4)(x+3+2) \\ (x-1)(x+5) \end{aligned}$$

From yesterday's sheet:

4. $x^2 - y - x + xy$

$$\begin{aligned} x^2 - x - y + xy & \quad * \text{ rearrange} \\ & \quad \text{first} \\ x(x-1) + y(x-1) \\ (x+y)(x-1) \end{aligned}$$

7. $5x^2 + 31x + 6$

$$\begin{aligned} 5x^2 + 30x + x + 6 \\ 5x(x+6) + 1(x+6) \\ (5x+1)(x+6) \end{aligned}$$

Homework 09-11

Factoring Using Substitution Homework Sheet

$$(8) \quad \frac{x^4 + 2x^2 + 1}{(x^2 + 1)(x^2 + 1)}$$

$$(9) \quad \frac{x^4 - 3x^2 - 10}{(x^2 - 5)(x^2 + 2)}$$

$$\text{let } y = x^2$$

$$(11) \quad \frac{(x+2)^2 - 16}{y^2 - 16}$$

$$\frac{(y-4)(y+4)}{(x+2-4)(x+2+4)}$$

$$(x-2)(x+6)$$

$$(10) \quad \frac{x^4 - 17x^2 + 16}{(x^2 - 1)(x^2 - 16)}$$

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

$$(12) \quad \frac{x^2(x+1) + 2x(x+1) + (x+1)}{(x+1)(x^2 + 2x + 1)}$$

$$\frac{(x+1)(x+1)(x+1)}{(x+1)^3}$$

$$(13) \quad \frac{12x^2(x-2) + 12x(x-2) + 3(x-2)}{(x-2)(12x^2 + 12x + 3)}$$

$$(x-2) \cdot \frac{3(4x^2 + 4x + 1)}{3(x-2)[4x^2 + 2x + 2x + 1]}$$

$$\frac{3(x-2)[2x(2x+1) + 1(2x+1)]}{3(x-2)(2x+1)(2x+1)}$$

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

Factoring Review Sheet 1

3. $a^2 + 2b - 2a - ab$

$$\begin{aligned} & a^2 - 2a - ab + 2b \\ & a(a-2) - b(a-2) \\ & (a-b)(a-2) \end{aligned}$$

5. $7x^3 + 7h^3$

$$\begin{aligned} & 7(x^3 + h^3) \\ & 7(x+h)(x^2 - xh + h^2) \end{aligned}$$

15. $(x^3 - 2)^2 - 3(x^3 - 2) - 18$

$$\text{let } m = x^3 - 2$$

$$m^2 - 3m - 18$$

$$(m-6)(m+3)$$

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

$$(x^3 - 8)(x^3 + 1)$$

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