

Review:

1. Solve the system of equations

$$\begin{cases} 3x - 6y = 6 \\ (9x - 3y = 8)(-2) \end{cases}$$

$$3\left(\frac{2}{3}\right) - 6y = 6$$

$$2 - 6y = 6$$

$$-6y = 4$$

$$y = -\frac{2}{3}$$

$$3x - 6y = 6$$

$$\frac{-18x + 6y = -16}{-15x = -10}$$

$$x = \frac{2}{3}$$

$$\left(\frac{2}{3}, -\frac{2}{3}\right)$$

2. Evaluate  $f(-2)$  when  $f(x) = -3x^2 - 2x + 5$ 

$$f(-2) = -3(-2)^2 - 2(-2) + 5$$

$$= -3(4) + 4 + 5$$

$$= -12 + 9 = \boxed{-3}$$

## HW Questions?

5.4

19.

$$\begin{array}{r} 2x^3 - 3x^2 + x - 4 \\ \hline x-5 \overline{) 2x^4 - 13x^3 + 16x^2 - 9x + 20} \\ \underline{-(2x^4 - 10x^3)} \\ -3x^3 + 16x^2 - 9x + 20 \\ \underline{-(-3x^3 + 15x^2)} \\ x^2 - 9x + 20 \\ \underline{-(x^2 - 5x)} \\ -4x + 20 \\ \underline{-(-4x + 20)} \\ 0 \end{array}$$

43.  $(18 + x - 4x^3) \div (2-x)$   $x-a$

$$\begin{array}{r} 2 \overline{) -4 \quad 0 \quad 1 \quad 18} \\ \underline{-4 \quad -8 \quad -16 \quad -30} \\ -4 \quad -8 \quad -15 \quad \boxed{-12} \end{array}$$

Q:  $-4x^2 - 8x - 15$       R:  $-12$

33.  $\div (2x+4)$   
 $\underline{-2}$

33.  $(2x^2 + 24) \div (2x + 4)$

$$\begin{array}{r} -2 \overline{) 2 \quad 0 \quad 24} \\ \underline{-4 \quad 8} \\ 2 \quad -4 \quad \boxed{32} \end{array}$$

Q:  $2x - 4$   
 R:  $32$

$x-2 + \frac{16}{x+2}$

$2x^2 + 24 = (2x + 4)(2x - 4) + 32$

$\frac{2x^2 + 24}{2x + 4} = 2x - 4 + \frac{32}{2x + 4}$

$\frac{4}{3} = 1 + \frac{1}{3}$

5.5 - factoring a polynomial

GCF - Greatest Common Factor

$$ab + ac = a(b + c)$$

$$12 = 1 \cdot 12 = 2 \cdot 6 = 3 \cdot 4 = 2 \cdot 2 \cdot 3$$

$$x^3 = x \cdot x^2 = x^2 \cdot x = x \cdot x \cdot x = 1 \cdot x^3$$

$$x^2 y^3 = 1 \cdot x^2 y^3 = x \cdot x \cdot y \cdot y \cdot y = x \cdot x \cdot y^3 = x \cdot x \cdot y \cdot y \cdot y = xy^2 \cdot xy$$

$$\underset{2 \cdot 2 \cdot 3}{12} x^3 y^4 \quad \& \quad \underset{2 \cdot 2 \cdot 2}{8} x^2 y^5$$

$$\text{GCF: } \underline{4x^2 y^4}$$

$$1. \quad 15x^2 y z^3, \quad 9x^3 y^2 z, \quad 75x^4 y^2 z^2$$

$$\text{GCF: } 3x^2 y z$$

$$2. \quad -16x^3 y^5 z^6, \quad 24x^4 y^{10} z^3, \quad 40x^2 y^2 z^9$$

$$\text{GCF: } 8x^2 y^2 z^3$$

5.5

$$14. x^2y^4 - x^2y - 4x^2$$

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

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$$20. b^{n+5} - b^5$$

$$b^5(b^n - 1)$$

$$22. 14a^4b^4 - 42a^3b^3 + 28a^2b^2$$

$$14a^2b^2(ab^2 - 3b + 2)$$

$$24. 10x^2y + 20x^2y^2 + 30x^2y^3$$

$$10x^2y(1 + 2y + 3y^2)$$

Factor trinomials of the form  
 $x^2 + bx + c = (x + d)(x + e)$

$$x^2 + 5x + 6 = (x + 2)(x + 3)$$

factors of 6 (constant term)  
 that sum to give you 5 (x-coeff.)

$$x^2 - 7x + 6 = (x - 1)(x - 6)$$

$$54. a^2 + a - 72$$

$$(a + 9)(a - 8)$$

$$64. b^2 - 6b - 16$$

$$(b - 8)(b + 2)$$

$$72. y^2 - 13y + 12$$

$$(y - 12)(y - 1)$$

$$74. x^2 + 7x - 18$$

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

Factoring by Grouping

$$28. 3(x+y) + a(x+y)$$

$$(x+y)(3 + a)$$

$$30. 3(a-7) - b(7-a)$$

$$3(a-7) - b(-1)(-7+a)$$

$$3(\underbrace{a-7}_x) + b(\underbrace{a-7}_x)$$

$$(a-7)(3 + b)$$

$$x(3 + b)$$

$$\begin{aligned}
 32. & (x^2 - 5x) + (4x - 20) \\
 & x(x-5) + 4(x-5) \\
 & (x-5)(x+4)
 \end{aligned}$$

$$\begin{aligned}
 34. & (ab+7b) - (3a-21) \\
 & b(a+7) - 3(a+7) \\
 & (a+7)(b-3)
 \end{aligned}$$

$$\begin{aligned}
 38. & a^2b + 3a^2 + 2b + 6 \\
 & a^2(b+3) + 2(b+3) \\
 & (b+3)(a^2+2)
 \end{aligned}$$

$$\begin{aligned}
 48. & 2y^3 - y^2 + 6y - 3 \\
 & y^2(2y-1) + 3(2y-1) \\
 & (2y-1)(y^2+3)
 \end{aligned}$$

Factor trinomials of the form  
 $ax^2+bx+c$

Homework

5.5

#21-47  
odd