

October 21, 2015

Quiz # 5

#1) $\frac{19a^3b^9c^{11}}{abc} = 19a^2b^8c^{10}$

#2) $\frac{x^4(x^{-8})^{-9} = x^{72}}{(x^{-2})^{-3} = x^6} = \frac{x^4 \cdot x^{72}}{x^6}$

alt.

$\frac{x^4 \cdot (x^{-2})^3}{(x^{-8})^9} = \frac{x^4 \cdot x^{-6}}{x^{-72}} = x^{70}$

$\frac{x^4 \cdot x^{-6}}{x^{-72}} = x^{70}$

Oct 21-1:12 PM

$$\frac{x^4 \cdot (x^{-8})^{-9} \cdot x^4}{(x^{-2})^{-3}} = \frac{x^4 \cdot \left(\frac{1}{x^8}\right)^9}{\left(\frac{1}{x^8}\right)^9}$$

Oct 21-1:19 PM

#3)

$$(-5x^3y^{-4})(2x^{-1}y)$$

$$-10x^2y^{-3} = -\frac{10x^2}{y^3}$$

Oct 21-1:20 PM

#4)

$$(x+9)(x^3+3x-8)$$

$$x^4 + 3x^2 - 8x + 9x^3 + 27x - 72$$

$$x^4 + 9x^3 + 3x^2 + 19x - 72$$

Oct 21-1:22 PM

Factoring

- Determine a GCF
 - GCF of $(4x^2, 6x^2y) = 2x^2$
 - GCF of $(5x, 4) = 1$
 - Relatively Prime!
- Factored out the GCF from an expression
 - $3a^2 + 12a$
 - $\boxed{3a}(\overbrace{a+4}) = 3a^2 + 12a$
 - GCF R.P.
- Factoring by Grouping
- Factor expressions of the form $ax^2 + bx + c$
 - * where $a = 1$
- Factor expressions of the form $ax^2 + bx + c$
 - * where $a \neq 1$

Oct 21-1:26 PM

- $ba + ca$
 $a(b+c)$
- $by^2 + cy^2$
 $y^2(b+c)$
- $b(x+5) + c(x+5)$
 $(x+5)(b+c)$

#13)

$$x(y+4) + 2(y+4)$$

$$(y+4)(x+2)$$

Oct 21-1:33 PM

Factoring by Grouping

- * Four Terms
- * Grouped by $\begin{matrix} 1^{st}, 2^{nd} & 3^{rd}, 4^{th} \\ \text{Group\#1} & \text{Group\#2} \end{matrix}$

factor out the GCF

$$\begin{matrix} \textcircled{1} & \textcircled{2} & \textcircled{3} & \textcircled{4} \\ 5xy & -15x & -6y & +18 \\ \text{Group\#1} & & \text{Group\#2} & \end{matrix}$$

$$5x(y-3) - 6(y-3)$$

$$(y-3)(5x-6)$$

Oct 21-1:38 PM

#8)

$$\begin{matrix} 105m^3 & +175m^2 & -75m & -125 \\ \text{Group\#1} & & \text{Group\#2} & \end{matrix}$$

$$35m^2(3m+5) - 25(3m+5)$$

$$(3m+5)(35m^2-25)$$

$$105m^3 - 75m + 175m^2 - 125$$

Oct 21-1:53 PM

$$\begin{matrix} 24x^2 & -32x & -45x & +60 \\ \text{Group\#1} & & \text{Group\#2} & \end{matrix}$$

$$8x(3x-4) - 15(3x-4)$$

R.P. GCF = 3

$$8x(3x-4) - 15(3x-4)$$

$$(3x-4)(8x-15)$$

Oct 21-1:47 PM

#24)

$$\begin{matrix} 4xy & +6 & -x & -24y \\ \text{Group\#1} & & \text{Group\#2} & \end{matrix}$$

$$2(2xy+3)$$

$$4xy - x - 24y + 6$$

$$x(4y-1) - 6(4y-1)$$

$$(4y-1)(x-6)$$

Oct 21-1:59 PM

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

FOIL

$$x^2 + 3x + 2x + 6$$

$$\begin{matrix} \square & \square & \square \\ x^2 & +5x & +6 \\ a & b & c \end{matrix}$$

Oct 21-2:05 PM

$$x^2 + 5x + 6$$

- Is there a GCF that can be factored out?
- Factor by using ac & b method or product sum

$a=1, b=5, c=6$

$$a \cdot c = (1) \cdot (6) = +6$$

$b = +5$

| | | |
|----|---|-----|
| + | + | + |
| -6 | + | 6 |
| 3 | 2 | 6 5 |

$$\begin{matrix} \textcircled{F} & \textcircled{L} \\ x^2 & +3x & +2x & +6 \\ \text{Group\#1} & & \text{Group\#2} & \end{matrix}$$

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

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

$$x^2 + 2x + 3x + 6$$

$$x^2 + 5x + 6$$

Oct 21-2:08 PM

$$x^2 + 12x + 35$$

$a = 1$
 $b = 12$
 $c = 35$
 $ac = 35$

| | |
|------------|-------------|
| $x^2 + 7x$ | $+ 5x + 35$ |
|------------|-------------|

$$x(x+7) + 5(x+7)$$

$$(x+7)(x+5)$$

$\begin{array}{r} + \\ 7 \\ \hline + \\ 5 \\ \hline 35 \end{array}$

Oct 21-2:23 PM

$$x^2 + 2x - 24$$

$a = 1$
 $b = 2$
 $c = -24$

| | |
|------------|-------------|
| $x^2 + 6x$ | $- 4x - 24$ |
|------------|-------------|

$$x(x+6) - 4(x+6)$$

$$(x+6)(x-4)$$

$\begin{array}{r} + \\ 6 \\ \hline - \\ 4 \\ \hline -24 \end{array}$

Oct 21-2:30 PM

Sign Patterns

* "a" must be positive!

- $ax^2 + bx + c$; both numbers have same sign.
 $(x+2)(x+3) = x^2 + 5x + 6$
 (2) tells what sign.
- $ax^2 - bx + c$; same sign both neg.
 $(x-2)(x-3) = x^2 - 5x + 6$
- $ax^2 + bx - c$; opposite signs: larger number is positive.
 $(x+3)(x-2) = x^2 + x - 6$
- $ax^2 - bx - c$; opposite signs: larger is neg.
 $(x-3)(x+2) = x^2 - x - 6$

Oct 21-2:36 PM

6.1 #1 - #67 odd
 6.3 & 6.4 read & do examples

Exam #2 - Wednesday
 October 28th

Oct 21-2:45 PM