

November 9, 2015
 * Quiz Wednesday
 * Factoring Special Cases
 * Solving Equations by factoring
 * Exam #3
 * November 30th

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#12) $-4k - 8k - 3 = -3 - 5k^2$
 * Set the equation equal to zero on one side.
 $-4k^2 + 5k^2 - 8k - 3 + 3 = 0$
 $k^2 - 8k = 0$
 $k(k-8) = 0$
 ① $k = 0$
 ② $k - 8 = 0$
 $k = 8$
 ck
 $k = 0$
 $-4(0)^2 - 8(0) - 3 = -3 - 5(0)^2$
 $-3 = -3$
 $-4(8)^2 - 8(8) - 3 = -3 - 5(8)^2$
 $-256 - 64 - 3 = -3 - 320$
 $-323 = -323$

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#14) $b^2 + 5b - 35 = 3b$
 $b^2 + 2b - 35 = 0$
 $b^2 + 7b - 5b - 35 = 0$ $ac = -35$
 $b = 2$
 $b(b+7) - 5(b+7) = 0$
 $(b+7)(b-5) = 0$
 ① $b + 7 = 0$
 $b = -7$
 ② $b - 5 = 0$
 $b = 5$

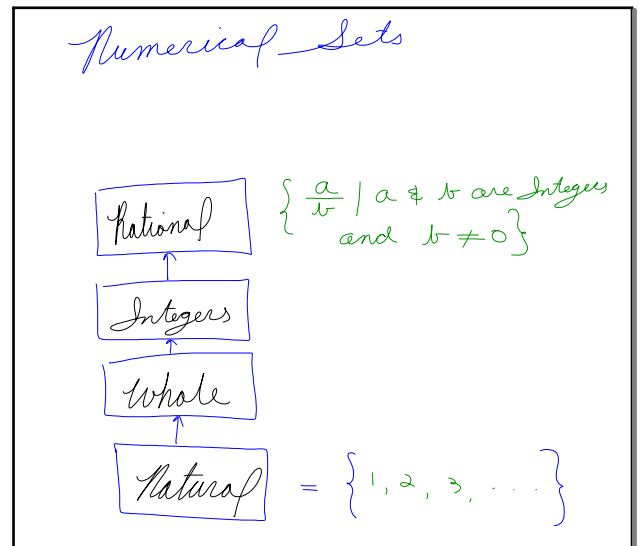
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#11) $16m^2 - 9$
 $a = 4m$
 $b = 3$
 $(4m+3)(4m-3)$
 #11) $98m^2 - 200$
 $2(49m^2 - 100)$
 $2(7m+10)(7m-10)$

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#14)
 $100x^2 + 180x + 81$
 $100x^2 + 90x + 90x + 81$ $ac = 8100$
 $10x(10x+9) + 9(10x+9)$ $b = 180$
 $(10x+9)(10x+9)$
 $(10x+9)^2$
 #12) $3 + 6b + 3b^2$
 $3b^2 + 6b + 3$
 $3b^2 + 3b + 3b + 3$ $ac = 9$
 $3b(b+1) + 3(b+1)$ $b = 6$
 $(b+1)(3b+3)$ $3/3$
 $(b+1)3(b+1)$
 $3(b+1)^2$

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Set-Builder Notation

Rational Numbers: $\left\{ \frac{a}{b} \mid a \text{ \& \& } b \text{ are Integers and } b \neq 0 \right\}$

Fraction such that

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Rational Numbers are Fractions

$\frac{5}{1}, \frac{1}{2}, -\frac{3}{4}, -75\%$
 $-0.33 \rightarrow -\frac{1}{3}, \frac{11}{2}$

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$\frac{P}{Q}$, where $P \text{ \& \& } Q$ are Polynomials

$\frac{4xy^4}{7z^8}, \frac{4x^2-25}{x^2+10x+25}$

$\frac{a^2+7a+12}{a^2+5a+6} \cdot \frac{a^2+8a+15}{a^2+5a+4}$

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7.3 Simplifying Rational (Fraction) Expressions

Recall

$\frac{x^2-9}{x^2-x-6} = \frac{(x+3)(x-3)}{(x-3)(x+2)}$

Steps = $\frac{(x+3)(x-3)}{(x+2)(x-3)} = \frac{x+3}{x+2}$

① Factor anything that is factorable

② Divide out the common factors \rightarrow $\cancel{I}P\cancel{I}$

$\frac{a}{b} \cdot \frac{c}{c} = \frac{ac}{bc} = \frac{a}{b}$ ("one")

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$\frac{x^2+x}{3x} \cdot \frac{6}{5x+5}$

$\frac{x(x+1)}{3x} \cdot \frac{2 \cdot 3 = 6}{5(x+1)}$

$\frac{(x+1)}{3} \cdot \frac{2 \cdot 3}{5(x+1)}$

$\frac{1}{1} \cdot \frac{2}{5} = \frac{2}{5}$

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$\frac{3x+3}{5x-5x^2} \cdot \frac{2x^2+x-3}{4x^2-9}$

$\frac{3(x+1)}{5x(1-x)} \cdot \frac{(2x+3)(x-1)}{(2x+3)(2x-3)}$

$\frac{3(x+1)}{5x(1-x)} \cdot \frac{(x-1)}{(2x-3)} = \frac{3(x+1)}{-5x} \cdot \frac{1}{2x-3}$

$\frac{(x-1)}{(1-x)} = \frac{(x-1)}{-(x-1)} = -1$

$(1-x)$
 $-(-1+x)$
Comm.
 $-(x-1)$

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