November 4, 2015

Exam #2

#1) $\dfrac{\frac{2}{7}+\frac{5}{x}}{-\frac{6}{x^3}} = \dfrac{\frac{2x+35}{7x}}{-\frac{6}{x^3}}$ K C F

$= \dfrac{2x+35}{7x} \cdot -\dfrac{x^3}{6}$

$= \dfrac{(2x+35)(x^2)}{42}$

$= \dfrac{2x^3+35x^2}{42}$

#2) $\mathcal{D} = \{-2, 3, -11\}$

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#5) $21v^3 - 84v^2 + 15v - 60$

$21v^2(v-4) + 15(v-4)$

$(v-4)(21v^2+15)$ GCF = 3

$(v-4)(3)(7v^2+5)$

$3(v-4)(7v^2+5)$

$(3v-12)(7v^2+5)$ GCF = 3

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#6) $2w^2+4w+48$

$2(w^2+2w+24)$ $ac = 24$, $b = 2$

+	+
1	1

RP

#7) $-4x^2+15x+25$

$-(4x^2-15x-25)$ $ac = -100$, $b = -15$

−	+
20	5

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

$-(4x(x-5)+5(x-5))$

$-(x-5)(4x+5)$

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$-8^2 = (-8)^2$

$(-1)\cdot 8^2$ $\quad (-8)(-8)$

$(-1)\cdot 8\cdot 8$ $\quad 64$

$-8\cdot 8$

-64

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$\frac{40}{40} = 100$

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Factoring Special Cases

$4x^2 - 25$ (2, 2, ?, ?)

① Difference

$a = (2x)^2 = 4x^2$

$b = (5)^2 = 25$

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

$4x^2 - 10x + 10x - 25$

$4x^2 - 25$ ✓

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$(a+b)(a-b) = a^2 - ab + ab - b^2$ (sum, diff; F O I L)

$= a^2 - b^2$

Conjugate Pairs

Difference of Two Squares

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$36y^2 - 49$

$a = (6y)^2 = 36y^2$

$b = (7)^2 = 49$

$(6y+7)(6y-7)$

$36y^2 - 42y + 42y - 49$

$36y^2 - 49$

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$169x^2y^2 - 144$

$a = 13xy$

$b = 12$

$(13xy+12)(13xy-12)$

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$x^2 - 4$

$a = 1x$

$b = 2$

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

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$16b^2 - 40b + 25$

$ac = (16)(25) = 400$

$b = -40$

$-20 \quad -20$

$16b^2 - 20b - 20b + 25$

$4b(4b-5) - 5(4b-5)$

$(4b-5)(4b-5)$

$(4b-5)^2$

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#8) $a^4 - 9$ (Diff)

$a = (a^2)^2 = a^4$

$b = (3)^2 = 9$

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

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$16x^2 + 25$

$a = 4x$

$b = 5$

$(4x+5)(4x+5)$

$16x^2 + 20x + 20x + 25$

$16x^2 + 40x + 25$

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#18) $1 - r^2$

$a = (1)^2 = 1$

$b = (r)^2 = r^2$

$(1+r)(1-r)$

* note:

$1 - r^2 = (1+r)(1-r) = (1-r)(1+r)$

$r^2 - 1 = (r+1)(r-1) = (r-1)(r+1)$

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$98m^2 - 200$

$2(49m^2 - 100)$

$2(7m+10)(7m-10)$

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#20) $343b^2 - 7b^4$

$7b^2(49 - b^2)$

$7b^2(7+b)(7-b)$

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② ← 2 solutions

$x^2 - 2x - 24 = 0$

Degree 2 polynomial

* Trinomial

* Quadratic

$x^2 - 2x - 24 = 0$ $ac = -24$, $b = -2$

$x^2 - 6x + 4x - 24 = 0$ (−6, +4)

$x(x-6) + 4(x-6) = 0$

$(x-6)(x+4) = 0$ (a · b)

Now factored!

① $x - 6 = 0$, $+6$ $+6$

$x = 6$

② $x + 4 = 0$

$x = -4$

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$x^2 - 2x - 24 = 0$

① $x = 6$

$(6)^2 - 2(6) - 24 = 0$

$36 - 12 - 24 = 0$

$24 - 24 = 0$

$0 = 0$ ✓

② $x = -4$

$(-4)^2 - 2(-4) - 24 = 0$

$16 + 8 - 24 = 0$

$24 - 24 = 0$

$0 = 0$ ✓

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Zero Factor Thm.

$ab = 0$

① $a = 0$

② $b = 0$

③ a & $b = 0$

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$x^2 - 2x - 24 = 0$

$+24 \quad +24$

$x^2 - 2x = 24$

$+2x \quad +2x$

$x^2 = 2x + 24$?

Not the way to solve

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#5) $x^2 - 11x + 19 = -5$

$64 - 88 + 19 = -5$

$-24 + 19$

-5

* Is not set to zero!

$x^2 - 11x + 19 + 5 = 0$

$x^2 - 11x + 24 = 0$ $\quad ac = 24$, $b = -11$

$x^2 - 8x - 3x + 24 = 0$ $\quad -8, -3$

$x(x-8) - 3(x-8) = 0$

$(x-8)(x-3) = 0$

① $x - 8 = 0$

$x = 8$

② $x - 3 = 0$

$x = 3$

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#12)

2 not it

$5r^2 - 44r + 120 = -30 + 11r$

$5r^2 - 55r + 150 = 0$

$5(r^2 - 11r + 30) = 0$ $\quad ac = 30$, $b = -11$, $-6, -5$

$5(r^2 - 6r - 5r + 30) = 0$

$5(r(r-6) - 5(r-6)) = 0$

$5(r-6)(r-5) = 0$

$(5r-30)(r-5) = 0$

① $5r - 30 = 0$

$5r = 30$

$r = 6$

② $r - 5 = 0$

$r = 5$

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