

January 30, 2017
 Ruggell's Practice Test
 #8) $2x^2 - 3x + 1 = 0$
 $x^2(2x - 3x + 1 = 0)$
 $x = 1 \quad x = \frac{1}{2}$
 use Quadratic Formula
 Solutions
 $a=2, b=-3, c=1$
 $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
 $x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(2)(1)}}{2(2)}$
 $= \frac{3 \pm \sqrt{9 - 8}}{4}$
 $= \frac{3 \pm \sqrt{1}}{4}$
 $= \frac{3 \pm 1}{4}$
 $x = 1 \quad x = \frac{1}{2}$

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#2) $\frac{20}{1} \left(\frac{3x-4}{1} + 7 = \frac{2x}{1} \right)$ LCD: 20
 $4(3x-4) + 140 = 10x$
 $12x - 16 + 140 = 10x$
 $2x + 124 = 0$
 $2x = -124$
 $x = -62$

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#3) $4x^2 + 12x = 7$
 $4x^2 + 12x - 7 = 0$
 use Quadratic Formula

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#5) $(\sqrt{x+20})^2 = (x)^2$
 $x + 20 = x^2$
 $0 = x^2 - x - 20$
 $0 = (x-5)(x+4)$
 $x = 5 \quad x = -4$
 $\sqrt{5+20} = 5$
 $\sqrt{25} = 5$
 $5 = 5$
 $\sqrt{-4+20} = -4$
 $\sqrt{16} = -4$
 $4 \neq -4$

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#4) $2x^3 + 3x^2 - 128x - 192 = 0$
 $x^2(2x+3) - 64(2x+3) = 0$
 $(2x+3)(x^2 - 64) = 0$
 $(2x+3)(x+8)(x-8) = 0$
 $x = -\frac{3}{2}; x = -8, x = 8$
 $2x+3=0$
 $2x = -3$
 $x = -\frac{3}{2}$

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#7) $|3x-5| - 12 \leq -3$
 $|3x-5| \leq 9$
 $-9 \leq 3x-5 \leq 9$
 $-4 \leq 3x \leq 14$
 $-\frac{4}{3} \leq x \leq \frac{14}{3}$
 $(-\frac{4}{3}, \frac{14}{3})$

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$|a| = \begin{cases} a & \text{if } a \geq 0 \\ -a & \text{if } a < 0 \end{cases}$

① $|a| < k \iff -k < a < k$

$[-k, k]$

② $|a| > k \iff a < -k \text{ or } a > k$

$(-\infty, -k) \cup (k, \infty)$

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ABS Equation
 $|a| = k$

① $\iff k \geq 0$

② $a = k$ ③ $a = -k$

② $k = 0$

$a = 0$

③ $k > 0$

No Solution!

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(x_2, y_2)
 (x_1, y_1)

Distance Form
 $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Mid-Point
 $\left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2} \right)$

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