

Warmup:

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$ax^2 + bx + c$$

$$a=8 \quad b=12 \quad c=-13$$

$$8x^2 + x - 13 = -11x$$

$$\begin{array}{r} +11x \qquad \qquad +11x \\ \hline \end{array}$$

$$8x^2 + 12x - 13 = 0$$

$$\frac{-12 \pm \sqrt{12^2 - 4(8)(-13)}}{a(8)}$$

$$\frac{-12 \pm \sqrt{560}}{16}$$

$$\frac{-12}{16} = \frac{-3}{4}$$

$$\frac{\pm \sqrt{35} - 3}{4}$$

$$\frac{4}{16} = \frac{1}{4}$$

$$\frac{-3 \pm \sqrt{35}}{4}$$

$$\frac{-12 \pm 4\sqrt{35}}{16}$$

$$\leftarrow \frac{-12}{16} \pm \frac{4\sqrt{35}}{16}$$

$$5x^2 = 80$$

$$-80 \quad -80$$

$$5x^2 - 80 = 0$$

$$\frac{5x^2}{5} = \frac{80}{5}$$

$$\sqrt{x^2} = \sqrt{16}$$

$$x = \pm 4$$

$$a=5 \quad b=0 \quad c=-80$$

$$\frac{\cancel{+0} \pm \sqrt{\cancel{16} - 4(5)(-80)}}{2(5)}$$

$$\frac{\pm \sqrt{1600}}{10}$$

$$\frac{\pm 40}{10} = \pm 4$$

$$1) a^2 - 9a - 136 = 0$$

$$\{17, -8\}$$

$$x = 17 \text{ or } -8$$

$$2) 4n^2 + 3n - 22 = 0$$

$$\left\{2, -\frac{11}{4}\right\}$$

$$3) 6x^2 + 7x - 3 = 0$$

$$\left\{\frac{1}{3}, -\frac{3}{2}\right\}$$

$$4) -5b^2 - 4b + 9 = 0$$

$$\left\{-\frac{9}{5}, 1\right\}$$

5) $v^2 - 8v + 1 = -3$

$$\{4 + 2\sqrt{3}, 4 - 2\sqrt{3}\}$$

$$4 \pm 2\sqrt{3}$$

6) $-3p^2 + 7p + 32 = 9$

$$\left\{ \frac{7 - 5\sqrt{13}}{6}, \frac{7 + 5\sqrt{13}}{6} \right\}$$

$$\frac{7 \pm 5\sqrt{13}}{6}$$

7) $-n^2 + 15 = 10$

$$\{-\sqrt{5}, \sqrt{5}\}$$

$$\pm \sqrt{5}$$

8) $10x^2 - 3 = 9$

$$\left\{ \frac{\sqrt{30}}{5}, -\frac{\sqrt{30}}{5} \right\}$$

$$\frac{\pm \sqrt{30}}{5}$$

9) $-3x^2 = -12$

$\{-2, 2\}$

10) $5v^2 = v + 18$

$\left\{2, -\frac{9}{5}\right\}$

11) $-n^2 + 54 = -3n$

$\{-6, 9\}$

12) $n^2 + 10n = -24$

$\{-4, -6\}$

13) $v^2 - 14 = 3v - 5$

$$\left\{ \frac{3 + 3\sqrt{5}}{2}, \frac{3 - 3\sqrt{5}}{2} \right\}$$

$$\frac{3 \pm 3\sqrt{5}}{2}$$

14) $-10p^2 - 13p = -3 - 9p^2 - 3p$

$$\{-5 - 2\sqrt{7}, -5 + 2\sqrt{7}\}$$

$$-5 \pm 2\sqrt{7}$$

15) $-12n^2 - 13n - 6 = -8 - 5n - 4n^2$

$$\left\{ \frac{-1 - \sqrt{2}}{2}, \frac{-1 + \sqrt{2}}{2} \right\}$$

$$\frac{-1 \pm \sqrt{2}}{2}$$

16) $-2n^2 + 10 - 7n = -7n$

$$\{-\sqrt{5}, \sqrt{5}\}$$

$$\pm \sqrt{5}$$

Quadratic Formula with Imaginary Solutions

$$4b^2 + 7b + 8 = 0$$

$$a = 4$$

$$b = 7$$

$$c = 8$$

$$\frac{-7 \pm \sqrt{7^2 - 4(4)(8)}}{2(4)}$$

$$= \frac{-7 \pm \sqrt{-79}}{8}$$

$$7^2$$

$$49 - 128$$

$$\star \frac{-7 \pm i\sqrt{79}}{8} \star$$

$$4n^2 + 8n + 5 = -7$$

$$4n^2 + 8n + 12 = 0$$

$$= \frac{-8 \pm \sqrt{8^2 - 4(4)(12)}}{2(4)}$$

$$= \frac{-8 \pm \sqrt{-128}}{8}$$

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$$\frac{-8 \pm 8i\sqrt{2}}{8} = -1 \pm i\sqrt{2}$$

$$8p^2 + 9p = -8$$

+8 +8

$$8p^2 + 9p + 8 = 0$$

$a = 8$ $b = 9$ $c = 8$

$$\frac{-9 \pm \sqrt{9^2 - 4(8)(8)}}{2(8)}$$

$$\frac{-9 \pm \sqrt{81 - 256}}{16}$$

$$= \frac{-9 \pm \sqrt{-175}}{16} = \left(\frac{-9 \pm 5i\sqrt{7}}{16} \right)$$

Tic -- Tac -- Toe

HW #10

Solving Quadratics with the Quadratic Formula