EMA

Review – Solving Quadratics

Name: KEY

Date: _____ Period: _____

Solve the following problem by the specified method.

A.) FACTORING

$4x^2 + 4x - 2 = 2 - 2x$

-4, 4, -1, 3

- $4x^2 + 6x - 4 = 0$
- $2(2x^2 + 3x - 2) = 0$
- $2[2x^2 + 4x - 1x - 2] = 0$
- $2[(2x^2 + 4x) + (-x - 2)] = 0$
- $2[2x(x+2) - 1(x+2)] = 0$
- $2(x+2)(2x-1) = 0$

$x + 2 = 0$

$\boxed{x = -2}$

$2x - 1 = 0$

$\boxed{x = 1/2}$

B.) SQUARE ROOT METHOD (Simplified Radical Form)

$1 + 3(x-4)^2 = -59$

- $3(x-4)^2 = -60$
- $(x-4)^2 = -20$
- $(x-4) = \pm\sqrt{-20}$
- $x - 4 = \pm\sqrt{-1}\sqrt{4}\sqrt{5}$
- $\boxed{x = 4 \pm 2i\sqrt{5}}$

C.) QUAD. FORMULA

$4x^2 - 7x + 7 = 3x^2 - 6x - 13$

20, -1

- $x^2 - x + 20 = 0$
- $x = \dfrac{-(-1) \pm \sqrt{(-1)^2 - 4(1)(20)}}{2(1)}$
- $x = \dfrac{1 \pm \sqrt{-79}}{2}$
- $\boxed{x = \dfrac{1 \pm i\sqrt{79}}{2}}$

D.) QUADRATIC FORMULA (Simplified & Exact)

$5x^2 - 3x + 4 = -3 + 3x$

- $5x^2 - 6x + 7 = 0$
- $x = \dfrac{-(-6) \pm \sqrt{(-6)^2 - 4(5)(7)}}{2(5)}$
- $x = \dfrac{6 \pm \sqrt{-104}}{10}$
- $x = \dfrac{6 \pm \sqrt{-1}\sqrt{4}\sqrt{26}}{10}$
- $x = \dfrac{6 \pm 2i\sqrt{26}}{10}$
- $\boxed{x = \dfrac{3 \pm i\sqrt{26}}{5}}$

Solve each quadratic equation by the method of your choice.

E.) $x^2 + 4x + 4 = 3x + 2$

- $x^2 + x + 2 = 0$
- $x = \dfrac{-1 \pm \sqrt{(1)^2 - 4(1)(2)}}{2(1)}$
- $x = \dfrac{-1 \pm \sqrt{-7}}{2}$
- $\boxed{x = \dfrac{-1 \pm i\sqrt{7}}{2}}$

F.) $4(x-1)^2 - 20 = 4$

- $4(x-1)^2 = 24$
- $(x-1)^2 = 6$
- $(x-1) = \pm\sqrt{6}$
- $\boxed{x = 1 \pm \sqrt{6}}$

G.) $5x^2 + 6x - 10 = 4x^2 + 10x$

- $x^2 - 4x - 10 = 0$
- $x = \dfrac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(-10)}}{2(1)}$
- $x = \dfrac{4 \pm \sqrt{56}}{2}$
- $x = \dfrac{4 \pm \sqrt{4}\sqrt{14}}{2}$
- $x = \dfrac{4 \pm 2\sqrt{14}}{2}$

$x = \boxed{2 \pm \sqrt{14}}$

H.) $-2x^2 + 7x = 10 - 4x$

- $0 = 2x^2 - 11x + 10$
- $x = \dfrac{-(-11) \pm \sqrt{(-11)^2 - 4(2)(10)}}{2(2)}$
- $\boxed{x = \dfrac{11 \pm \sqrt{41}}{4}}$
- $\boxed{x = 4.351}$ $\boxed{x = 1.149}$

I.) $4x^2 - 7 = -2x^2 - 31$ (NO "B" TERM)

- $6x^2 + 24 = 0$
- $6x^2 = -24$
- $x^2 = -4$
- $x = \pm\sqrt{-4}$
- $\boxed{x = \pm 2i}$

J.) $6x^2 - 25x + 5 = 3x^2 - 3$

- $3x^2 - 25x + 8 = 0$ (24, −1; −24, −25)
- $3x^2 - 24x - 1x + 8 = 0$
- $(3x^2 - 24x) + (-x + 8) = 0$
- $3x(x - 8) - 1(x - 8) = 0$
- $(x - 8)(3x - 1) = 0$
- $x - 8 = 0$; $3x - 1 = 0$

  $\boxed{x = 8}$; $\boxed{x = 1/3}$

K.) $3x^2 - 7x = 2x^2 + x + 9$

- $x^2 - 8x - 9 = 0$ (−9, 1; −9, −8)
- $x^2 - 9x + x - 9 = 0$
- $(x^2 - 9x) + (x - 9) = 0$
- $x(x - 9) + 1(x - 9) = 0$
- $(x - 9)(x + 1) = 0$
- $(x + 1)(x - 9) = 0$
- $x + 1 = 0$; $x - 9 = 0$

  $\boxed{x = -1}$; $\boxed{x = 9}$

L.) $5 - 2(x + 2)^2 = 21$

- $-2(x + 2)^2 = 16$
- $(x + 2)^2 = -8$
- $(x + 2) = \pm\sqrt{-8}$
- $x + 2 = \pm\sqrt{-1}\sqrt{4}\sqrt{2}$
- $\boxed{x = -2 \pm 2i\sqrt{2}}$