NAME:

DATE: Key

A2.Q2.BERMELLEMBO: SOLVING QUADRATIC EQUATIONS BY MIXED METHODS

DAY EQ5
(EQUATIONS)

REVIEW

Solve the equation by using the **factoring method (EQ1)**. BOX YOUR ANSWER

1. $2x^2 - 3x = 5$ $\quad -5 \quad -5$ $\qquad 2x^2 - 3x - 5 = 0$

ALSO CIRCLE: A. TWO REAL SOLUTIONS B. ONE REAL REPEAT SOLUTION C. NO REAL SOLUTIONS

$2x^2 - 3x - 5 = 0$

$2x \quad x \qquad +1 \quad -5$

$-5 + 1$

$(2x - 5)(x + 1) = 0$

$2x - 5 = 0 \qquad x + 1 = 0$

$+5 \quad +5 \qquad -1 \quad -1$

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

$x = \frac{5}{2}$ OR $x = -1$

$(2x+1)(x-5)$

$+1x$

$-10x$

$-9x$ NO

$(2x-5)(x+1)$

$-5x$

$+2x$

$-3x$ yes

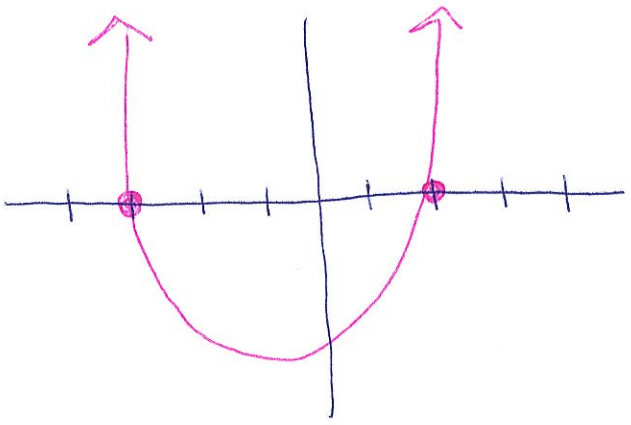
Solve the equation by using the **graphing method (EQ3)**. BOX YOUR ANSWER

2. $x^2 + x = 6$ $\quad -6 \quad -6$ *Be sure to draw a quick sketch to support your answer(s).*

ALSO CIRCLE: A. TWO REAL SOLUTIONS B. ONE REAL REPEAT SOLUTION C. NO REAL SOLUTIONS

$x^2 + x - 6 = 0$

Let $f(x) = x^2 + x - 6 = 0$



$x = -3$ OR $x = 2$

Solve the equation by using the **formula method (EQ2)**. BOX YOUR ANSWER

3. $5x^2 = 14x + 3$ $-14x-3$ $-14x-3$ $5x^2-14x-3=0$ $a=5$ $b=-14$ $c=-3$

ALSO CIRCLE: A. TWO REAL SOLUTIONS B. ONE REAL REPEAT SOLUTION C. NO REAL SOLUTIONS

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

$$x = \frac{-(-14) \pm \sqrt{(-14)^2 - 4(5)(-3)}}{2(5)}$$

$$x = \frac{14 \pm \sqrt{256}}{10}$$

$$x = \frac{14 \pm 16}{10}$$

$$x = \frac{14+16}{10} \quad \text{OR} \quad x = \frac{14-16}{10}$$

$$x = \frac{30}{10} \qquad x = \frac{-2}{10}$$

$$\boxed{x = 3 \quad \text{OR} \quad x = -\frac{1}{5}}$$

(EQ4)

QUADRATIC FORMULA: $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

4. GIVEN: $3x^2 + 7 = 5x$ $\quad -5x \quad -5x$ $\quad 3x^2 - 5x + 7 = 0 \quad a=3 \quad b=-5 \quad c=7$

A. Find the value of the discriminant.

$b^2 - 4ac$

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

$25 - 84$

$\boxed{-59}$

B. Use the value of the discriminant to determine the number and type of solutions.

Since -59 is negative, there are

two imaginary solutions

C. Solve the given quadratic formula equation using the quadratic formula. Express your final answer in simplified form (no decimals).

$$x = \frac{-(-5) \pm \sqrt{-59}}{2(3)}$$

$$x = \frac{5 \pm i\sqrt{59}}{6}$$

$$\boxed{x = \frac{5 + i\sqrt{59}}{6} \quad \text{OR} \quad x = \frac{5 - i\sqrt{59}}{6}}$$

Solve the equation by using the **factoring method**. BOX YOUR ANSWER

5. $3x^2+10x-8=0$

ALSO CIRCLE: A. TWO REAL SOLUTIONS B. ONE REAL REPEAT SOLUTION C. TWO IMAGINARY SOLUTIONS

$3x^2+10x-8=0$

$3x \cdot x$ $\quad -1 \cdot +8$, $+8 \cdot -1$, $-2 \cdot +4$, $+4 \cdot -2$

$(3x-1)(x+8)$ $\quad -1x$, $+24x$, $23x$ NO

$(3x+8)(x-1)$ $\quad +8x$, $-3x$, $5x$ NO

$(3x-2)(x+4)$ $\quad -2x$, $+12x$, $10x$ yes

$(3x+4)(x-2)$ $\quad 4x$, $-6x$, $-2x$ NO

$(3x-2)(x+4)=0$

$3x-2=0$ $\quad +2 \quad +2$

$\frac{3x}{3}=\frac{2}{3}$

$x+4=0$ $\quad -4 \quad -4$

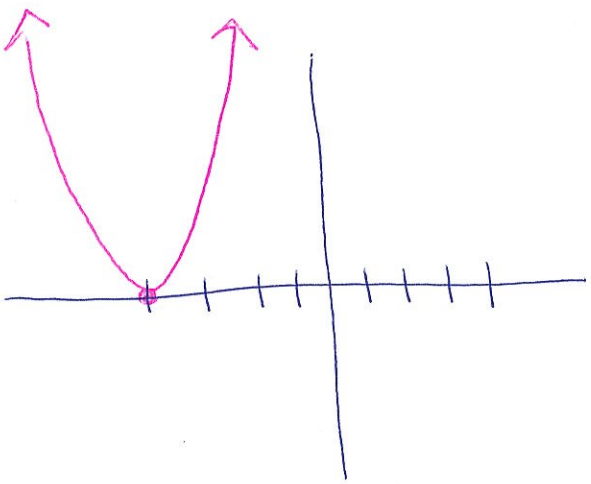
$x=\frac{2}{3}$ OR $x=-4$

Solve the equation by using the **graphing method**. BOX YOUR ANSWER

6. $x^2+8x+16=0$ *Be sure to draw a quick sketch to support your answer(s).*

ALSO CIRCLE: A. TWO REAL SOLUTIONS B. ONE REAL REPEAT SOLUTION C. TWO IMAGINARY SOLUTIONS

Let $f(x)=x^2+8x+16=0$



$x=-4$

Solve the equation by using the **formula method.** BOX YOUR ANSWER

7. $9x^2+6x+1=0$ (If there are two imaginary solutions, write your answers with i)

ALSO CIRCLE: A. TWO REAL SOLUTIONS B. ONE REAL REPEAT SOLUTION C. TWO IMAGINARY SOLUTIONS

$a=9 \quad b=6 \quad c=1$ $\qquad x=\dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$

$$x=\frac{-(6)\pm\sqrt{(6)^2-4(9)(1)}}{2(9)}$$

$$x=\frac{-6\pm\sqrt{0}}{18}$$

$$x=\frac{-6+0}{18} \quad \text{OR} \quad x=\frac{-6-0}{18}$$

$$\boxed{x=-\frac{1}{3} \quad \text{OR} \quad x=-\frac{1}{3}}$$

8. $3x^2-x+3=0$ (If there are two imaginary solutions, write your answers with i)

ALSO CIRCLE: A. TWO REAL SOLUTIONS B. ONE REAL REPEAT SOLUTION C. TWO IMAGINARY SOLUTIONS

$a=3 \quad b=-1 \quad c=3$ $\qquad x=\dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$

$$x=\frac{-(-1)\pm\sqrt{(-1)^2-4(3)(3)}}{2(3)}$$

$$x=\frac{1\pm\sqrt{-35}}{6}$$

$$x=\frac{1\pm i\sqrt{35}}{6}$$

$$\boxed{x=\frac{1+i\sqrt{35}}{6} \quad \text{OR} \quad x=\frac{1-i\sqrt{35}}{6}}$$

9. Simplify the expression that includes the imaginary number ***i*** "add cinnamon"

A. $12i(5i)$

$60i^2$

$60(-1)$

$\boxed{-60}$

B. $(3i+4)(2i+7)$

$6i^2 + 21i + 8i + 28$

$6(-1) + 29i + 28$

$-6 + 29i + 28$

$\boxed{22+29i}$