Math 30-2

Name Key

Quadratic Formula Worksheet

Solve each equation with the quadratic formula.

1) $2x^2 - x - 1 = 0$

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

$$= \frac{1 \pm \sqrt{9}}{4} = \frac{1 \pm 3}{4} \quad \frac{(1+3)}{4} = \boxed{1}$$

$$\frac{(1-3)}{4} = \boxed{\frac{-1}{2}}$$

2) $2n^2 - n - 10 = 0$

$$x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(2)(-10)}}{2 \cdot 2}$$

$$= \frac{1 \pm \sqrt{81}}{4} = \frac{1 \pm 9}{4} \quad \frac{(1+9)}{4} = \boxed{\frac{5}{2}}$$

$$\frac{(1-9)}{4} = \boxed{-2}$$

3) $a^2 + 5a - 24 = 0$

$$x = \frac{-5 \pm \sqrt{(5)^2 - 4(1)(-24)}}{2 \cdot 1}$$

$$= \frac{-5 \pm \sqrt{121}}{2} = \frac{-5 \pm 11}{2} \quad \frac{(-5+11)}{2}$$

$$\frac{(-5-11)}{2}$$

$$\boxed{x = 3, -8}$$

4) $k^2 - 2k - 8 = 0$

$$x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(-8)}}{2 \cdot 1}$$

$$= \frac{2 \pm \sqrt{36}}{2} = \frac{2 \pm 6}{2} \quad \frac{(2+6)}{2} = \boxed{4}$$

$$\frac{(2-6)}{2} = \boxed{-2}$$

5) $2x^2 - 4x - 6 = 0$

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

$$= \frac{4 \pm \sqrt{64}}{4} = \frac{4 \pm 8}{4} \quad \frac{(4+8)}{4} = \boxed{3}$$

$$\frac{(4-8)}{4} = \boxed{-1}$$

6) $2n^2 + 3n - 9 = 0$

$$x = \frac{-3 \pm \sqrt{(3)^2 - 4(2)(-9)}}{2 \cdot 2}$$

$$= \frac{-3 \pm \sqrt{81}}{4} = \frac{-3 \pm 9}{4} \quad \frac{(-3+9)}{4} = \boxed{\frac{3}{2}}$$

$$\frac{(-3-9)}{4} = \boxed{-3}$$

7) $b^2 - 3b - 4 = 0$

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

$$= \frac{3 \pm \sqrt{25}}{2} = \frac{3 \pm 5}{2}$$

$$\frac{(3+5)}{2} = \boxed{4}$$

$$\frac{(3-5)}{2} = \boxed{-1}$$

8) $2m^2 + m - 1 = 0$

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

$$= \frac{-1 \pm \sqrt{9}}{4} = \frac{-1 \pm 3}{4}$$

$$= \frac{(-1+3)}{4} = \boxed{\frac{1}{2}}$$

$$= \frac{(-1-3)}{4} = \boxed{-1}$$

9) $2x^2 - 3x - 9 = 0$

$$x = \frac{3 \pm \sqrt{(-3)^2 - 4(2)(-9)}}{2 \cdot 2}$$

$$= \frac{3 \pm \sqrt{81}}{4} = \frac{3 \pm 9}{4}$$

$$\frac{(3+9)}{4} = \boxed{3}$$

$$\frac{(3-9)}{4} = \boxed{\frac{-3}{2}}$$

10) $-2p^2 + p + 3 = 0$

$$x = \frac{1 \pm \sqrt{(-1)^2 - 4(-2)(3)}}{2 \cdot -2} = \frac{1 \pm \sqrt{25}}{-4}$$

$$= \frac{1 \pm 5}{-4}$$

$$\frac{(1+5)}{-4} = \boxed{\frac{3}{-2}}$$

$$\frac{(1-5)}{-4} = \boxed{1}$$

11) $2m^2 + 3m - 2 = 0$

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

$$= \frac{-3 \pm \sqrt{25}}{4} = \frac{-3 \pm 5}{4}$$

$$\boxed{x = 1/2, -2}$$

12) $2v^2 + v - 10 = 0$

$$x = \frac{-1 \pm \sqrt{(1)^2 - 4(2)(-10)}}{2 \cdot 2}$$

$$= \frac{-1 \pm \sqrt{81}}{4} = \frac{-1 \pm 9}{4}$$

$$\boxed{x = 2, -5/2}$$