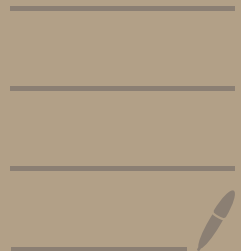


HW #7 Solutions



Factoring

$$1.) x^2 - 6x + 8 = 0$$

$$A: -6 \quad M: 8$$

$$-2 \quad \& \quad -4$$

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

$$x-2=0 \quad x-4=0$$

$$x=2 \quad x=4$$

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

$$A: -5 \quad M: 2 \cdot -3 = -6$$

$$-6 \quad \& \quad 1$$

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

$$2x(x-3) + 1(x-3) = 0$$

$$(2x+1)(x-3) = 0$$

$$2x+1 \quad x-3=0$$

$$2x=-1 \quad x=3$$

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

$$3.) 3x^2 + 7x + 2 = 0$$

$$A: 7 \quad M: 3 \cdot 2 = 6$$

$$6 \quad \& \quad 1$$

$$3x^2 + 6x + x + 2 = 0$$

$$3x(x+2) + 1(x+2) = 0$$

$$(3x+1)(x+2) = 0$$

$$3x+1=0 \quad x+2=0$$

$$3x=-1 \quad x=-2$$

$$x=-\frac{1}{3}$$

$$4.) 4x^2 - 12x + 8 = 0$$

$$A: -12 \quad M: 4 \cdot 2 = 8$$

$$-8 \quad \& \quad -4$$

$$4x^2 - 4x - 8x + 8 = 0$$

$$4x(x-1) - 8(x-1) = 0$$

$$(4x-8)(x-1) = 0$$

$$4x-8=0 \quad x-1=0$$

$$4x=8 \quad x=1$$

$$x=2$$

$$5.) x^2 - 9 = 0$$

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

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

$$x=3$$

$$x=-3$$

$$6.) 2x^2 + 5x + 3 = 0$$

$$A: 5 \quad M: 2 \cdot 3 = 6$$

$$2 \quad \& \quad 3$$

$$2x^2 + 2x + 3x + 3 = 0$$

$$2x(x+1) + 3(x+1) = 0$$

$$(2x+3)(x+1) = 0$$

$$2x+3=0 \quad x+1=0$$

$$2x=-3 \quad x=-1$$

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

$$7.) 3x^2 - 10x + 7 = 0$$

$$A: -10 \quad M: 3 \cdot 7 = 21$$

$$-3 \quad \& \quad -7$$

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

$$3x(x-1) - 7(x-1) = 0$$

$$(3x-7)(x-1) = 0$$

$$3x-7=0 \quad x-1=0$$

$$3x=7 \quad x=1$$

$$x=\frac{7}{3}$$

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

Quadratic formula

$$1.) x^2 + 4x - 5 = 0$$

a b c

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

$$x = \frac{-4 \pm \sqrt{16 + 20}}{2}$$

$$x = \frac{-4 \pm \sqrt{36}}{2}$$

$$x = \frac{-4 \pm 6}{2}$$

$$x = -2 \pm 3$$

$$x = -2 - 3, -2 + 3$$

$$x = -5, 1$$

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

a b c

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

$$x = \frac{3 \pm \sqrt{9 + 16}}{4}$$

$$x = \frac{3 \pm \sqrt{25}}{4}$$

$$x = \frac{3 \pm 5}{4}$$

$$x = \frac{3 + 5}{4}, \frac{3 - 5}{4}$$

$$x = \frac{8}{4}, \frac{-2}{4}$$

$$x = 2, -\frac{1}{2}$$

$$3.) 3x^2 + 2x - 1 = 0$$

a b c

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

$$x = \frac{-2 \pm \sqrt{4 + 12}}{6}$$

$$x = \frac{-2 \pm \sqrt{16}}{6}$$

$$x = \frac{-2 \pm 4}{6}$$

$$x = \frac{-2 - 4}{6}, \frac{-2 + 4}{6}$$

$$x = \frac{-6}{6}, \frac{2}{6}$$

$$x = -1, \frac{1}{3}$$

$$4.) x^2 - 8x + 16 = 0$$

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

$$x = \frac{8 \pm \sqrt{64 - 64}}{2}$$

$$x = \frac{8 \pm \sqrt{0}}{2}$$

$$x = \frac{8 - \sqrt{0}}{2}, \frac{8 + \sqrt{0}}{2}$$

$$x = \frac{8}{2}, \frac{8}{2}$$

$$x = 4, 4$$

$$\text{so } x = 4$$

$$5.) 2x^2 + 3x - 5 = 0$$

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

$$x = \frac{-3 \pm \sqrt{9 + 40}}{4}$$

$$x = \frac{-3 \pm 7}{4}$$

$$x = \frac{-3 - 7}{4}, \frac{-3 + 7}{4}$$

$$x = \frac{-10}{4}, \frac{4}{4}$$

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

$$6.) 3x^2 - 4x - 2 = 0$$

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

$$x = \frac{4 \pm \sqrt{16 + 24}}{6}$$

$$x = \frac{4 \pm \sqrt{40}}{6} \quad \sqrt{40} = \sqrt{2 \cdot 2 \cdot 2 \cdot 5} = 2\sqrt{2 \cdot 5} = 2\sqrt{10}$$

$$x = \frac{4 \pm 2\sqrt{10}}{6}$$

$$x = \frac{2 \pm \sqrt{10}}{3}$$

$$x = \frac{2 - \sqrt{10}}{3}, \frac{2 + \sqrt{10}}{3}$$