

# Extra Solving Practice

Solve using any method. Make sure you use factoring and quadratic formula at least twice each

$$2x^2 + 7x - 4 = 0$$

Factor:  $(2x-1)(x+4) = 0$

$$2x-1=0 \quad \text{or} \quad x+4=0$$

$$2x=1 \quad \quad \quad x=-4$$

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

$$x = \left\{ \frac{1}{2}, -4 \right\}$$

$$x^2 - 4x - 32 = 0$$

Quad. Form:  $a=1 \quad b=-4 \quad c=-32$

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(-32)}}{2(1)}$$

$$x = \frac{4 \pm \sqrt{16 + 128}}{2}$$

$$x = \frac{4 \pm \sqrt{144}}{2}$$

$$x = \frac{4 \pm 12}{2}$$

$$x = \left\{ \frac{4+12}{2}, \frac{4-12}{2} \right\}$$

$$x = \left\{ \frac{16}{2}, \frac{-8}{2} \right\}$$

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

$$4x - 4x^2 = 1$$

Factor:  $\frac{-4x^2 + 4x - 1}{-1 \quad -1} = 0$

$$4x^2 - 4x + 1 = 0$$

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

$$2x-1=0 \quad \text{or} \quad 2x-1=0$$

same

$$2x-1=0$$

$$2x=1$$

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

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

Quad form:  $a=6, \quad b=1, \quad c=-2$

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

$$x = \frac{-1 \pm \sqrt{1 + 48}}{12}$$

$$x = \frac{-1 \pm \sqrt{49}}{12}$$

$$x = \frac{-1 \pm 7}{12}$$

$$x = \left\{ \frac{-1+7}{12}, \frac{-1-7}{12} \right\} = \left\{ \frac{6}{12}, \frac{-8}{12} \right\}$$

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

$$12x^2 + 17x + 12 = 0$$

Not factorable ...

$$a=12 \quad b=17 \quad c=12$$

$$X = \frac{-17 \pm \sqrt{17^2 - 4(12)(12)}}{2(12)}$$

$$X = \frac{-17 \pm \sqrt{289 - 576}}{24} \leftarrow \text{negative \#}$$

NO SOLUTION

$$9x^2 = 6x - 1$$

$$-6x + 1 \quad -6x + 1$$

$$9x^2 - 6x + 1 = 0$$

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

$$X = \frac{6 \pm \sqrt{36 - 36}}{18}$$

$$X = \frac{6 \pm \sqrt{0}}{18}$$

$$X = \frac{6}{18}$$

$$X = \frac{1}{3}$$

$$-16x^2 = -32x$$

$$+32x \quad +32x$$

$$\frac{-16x^2 + 32x}{-16} = \frac{0}{-16}$$

$$x^2 - 2x = 0$$

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

$$x=0 \quad \text{or} \quad x-2=0$$
$$x=2$$

$$X = \{0, 2\}$$

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

$(x-4)(x-2)$   
NOT factorable ...

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

$$X = \frac{2 \pm \sqrt{4 - 24}}{2}$$

$$X = \frac{2 \pm \sqrt{-20}}{2} \leftarrow \text{NO SOLUTION}$$

### Extra Factoring practice:

1.  $a^2 + 2ab + b^2 =$   
 $= (a+b)(a+b)$   
 $= (a+b)^2$

2.  $a^2 - 2ab + b^2 =$   
 $= (a-b)(a-b)$   
 $= (a-b)^2$

3.  $m^2 + 15m + 56 =$   
 $= (m+7)(m+8)$

4.  $3a^4 - 12a^3 + 6a^2 =$   
 $= 3a^2(a^2 - 4a + 2)$

5.  $x^2 - 2x + 1 =$   
 $= (x-1)(x-1)$   
 $= (x-1)^2$

6.  $d^2 - 5d + 4 =$   
 $= (d-4)(d-1)$

7.  $c^2 + 7c - 18 =$   
 $(c+9)(c-2)$

8.  $d^2 - d - 6 =$   
 $(d-3)(d+2)$

9.  $m^2 - 2m - 24 =$   
 $(m-6)(m+4)$

10.  $a^2 + 3a - 10 =$   
 $(a+5)(a-2)$

11.  $x^2 - x - 20 =$   
 $(x-5)(x+4)$

12.  $a^2 + a - 20 =$   
 $(a+5)(a-4)$

$$13. x^2 - 2x - 15 = \\ (x-5)(x+3)$$

$$14. a^2 - 10a + 9 = \\ (a-9)(a-1)$$

$$15. 2x^2 - 8 \\ = 2(x^2 - 4) \\ = 2(x+2)(x-2)$$

$$16. 3x^2 - 3 \\ = 3(x^2 - 1) \\ = 3(x+1)(x-1)$$

$$17. 8x^2 - 2 \\ = 8(x^2 - \frac{1}{4}) \\ = 8(x + \frac{1}{2})(x - \frac{1}{2})$$

$$18. a^3 - ab^2 \\ = a(a^2 - b^2) \\ = a(a+b)(a-b)$$

$$19. 5x^3 - 20x \\ = 5x(x^2 - 4) \\ = 5x(x+2)(x-2)$$

$$20. x^2 - 16 \\ = (x+4)(x-4)$$

$$21. 2x^2 - \frac{2}{9} \\ = 2(x^2 - \frac{1}{9}) \\ = 2(x + \frac{1}{3})(x - \frac{1}{3})$$

$$22. -x^2 + 4 \\ = -(x^2 - 4) \\ = -(x+2)(x-2)$$