

Answers to Section P-5 Solving Quadratic Eqns

1) $\left\{\frac{7}{3}, 2\right\}$

2) $\left\{-\frac{1}{7}, -3\right\}$

3) $\left\{-\frac{3}{2}, -7\right\}$

4) $\left\{\frac{-5+3\sqrt{3}}{2}, \frac{-5-3\sqrt{3}}{2}\right\}$

5) $\left\{\frac{5+\sqrt{95}}{10}, \frac{5-\sqrt{95}}{10}\right\}$

6) $\left\{\frac{-1+\sqrt{33}}{6}, \frac{-1-\sqrt{33}}{6}\right\}$

7)

8)

9)

$$1) \frac{24a^2 - 104a + 112 = 0}{8}$$

$$3a^2 - 13a + 14 = 0$$

$$\frac{42}{-13} \quad \frac{3a^2}{-6a} = \frac{a}{-2} \quad \frac{3a^2}{-7a} = \frac{3a}{-7}$$

$$(a-2)(3a-7) = 0$$

$$a-2=0 \quad 3a-7=0$$

$$\boxed{a=2}$$

$$3a=7$$

$$\boxed{a=7/3}$$

$$2) 10n^2 - 10n - 7 = 0$$

$$b^2 - 4ac$$

$$(-10)^2 - 4(10)(-7) = 100 + 280 = 380$$

380 2 real sol's

$$x = \frac{-(-10) \pm \sqrt{380}}{2(10)} = \frac{10 \pm 2\sqrt{95}}{20}$$

$$\boxed{x = \frac{5 \pm \sqrt{95}}{10}}$$

-70	-10
1, -70	-69
2, -35	-33
5, -14	-9
	-10

skipped over
not factorable

$$3) 3(2x+3)^2 - 5 = 16$$

$$3(2x+3)^2 = 21$$

$$(2x+3)^2 = 7$$

$$2x+3 = \pm\sqrt{7}$$

$$2x = -3 \pm \sqrt{7}$$

$$\boxed{x = \frac{-3 \pm \sqrt{7}}{2}}$$

$$4) \frac{4m^2 + 34m + 42 = 0}{2}$$

$$2m^2 + 17m + 21 = 0$$

$$\frac{42}{3} \quad \frac{14}{17}$$

$$2m^2 + 14m + 3m + 21 = 0$$

$$2m(m+7) + 3(m+7) = 0$$

$$(2m+3)(m+7) = 0$$

$$2m+3=0 \quad m+7=0$$

$$2m=-3 \quad \boxed{m=-7}$$

$$\boxed{m=-3/2}$$

$$5) 4(x-7)^2 - 6 = 10$$

$$4(x-7)^2 = 16$$

$$(x-7)^2 = 4$$

$$x-7 = \pm 2$$

$$x = 7 \pm 2 \quad \boxed{x=9}$$

$$6) 9x^2 + 3x - 8 = 0$$

$$b^2 - 4ac$$

$$\begin{array}{r} 4 \\ 36 \\ 8 \\ \hline 288 \end{array}$$

$$\begin{array}{r} 33 \\ \times 9 \\ \hline 297 \end{array}$$

$$3^2 - 4(9)(-8)$$

$$9 + 288$$

$$297$$

2 real
sol'n's

$$x = \frac{-3 \pm \sqrt{297}}{2(9)} \quad \begin{array}{l} \nearrow 9 \\ \searrow 33 \end{array}$$

$$x = \frac{-3 \pm 3\sqrt{33}}{18}$$

$$x = \frac{-1 \pm \sqrt{33}}{6}$$

$$\begin{array}{r|l} -72 & 3 \\ \hline -1, 72 & 71 \\ -3, 36 & 34 \\ -3, 24 & 21 \\ -4, 18 & 14 \\ -6, 12 & 6 \\ -8, 9 & 1 \end{array}$$

missed 3
not factorable

$$7) 2x^2 + 10x - 1 = 0$$

$$b^2 - 4ac$$

$$10^2 - 4(2)(-1)$$

$$100 + 8$$

$$108$$

2 real sol'n's

$$x = \frac{-10 \pm \sqrt{108}}{2(2)} = \frac{-10 \pm \sqrt{108}}{4} \quad \begin{array}{l} \nearrow 36 \\ \searrow 3 \end{array}$$

$$x = \frac{-10 \pm 6\sqrt{3}}{4}$$

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

$$\begin{array}{r} -2 \\ \times 10 \\ \hline \end{array}$$

not
factorable

$$8) -7 - 3x^2 = -67$$

$$+7$$

$$+7$$

$$\frac{-3x^2 = -60}{-3}$$

$$x^2 = 20$$

$$x = \pm \sqrt{20} \quad \begin{array}{l} \nearrow 4 \\ \searrow 5 \end{array}$$

$$x = \pm 2\sqrt{5}$$

$$9) 7m^2 + 22m + 3 = 0$$

$$\begin{array}{r} 21 \\ \times 1 \\ \hline 21 \end{array}$$

$$\begin{array}{c} m+3 \\ 7m \quad \begin{array}{|c|c|} \hline 7m^2 & 21m \\ \hline m & 3 \\ \hline \end{array} \\ + \\ 1 \end{array}$$

$$(7m+1)(m+3) = 0$$

$$7m+1=0 \quad m+3=0$$

$$7m=-1$$

$$m=-3$$

$$m = -\frac{1}{7}$$

* $a=7, c=3$
both prime
could've
guessed
+
checked

$$(7m+3)(m+1) \text{ or } (7m+1)(m+3)$$