

6.7

1) $(k-7)(k+2) = 0$

$k-7 = 0 \quad k+2 = 0$

$$\frac{+7 \quad +7}{k=7} \quad \frac{-2 \quad -2}{k=-2}$$

3) $(x-1)(x+4) = 0$

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

$$\frac{+1 \quad +1}{x=1} \quad \frac{-4 \quad -4}{x=-4}$$

5) $6x^2 - 150 = 0$

$6(x^2 - 25) = 0$

$6(x+5)(x-5) = 0$

$x+5 = 0 \quad x-5 = 0$

$$\frac{-5 \quad -5}{x=-5} \quad \frac{+5 \quad +5}{x=5}$$

7) $2n^2 + 10n - 28 = 0$

$2(n^2 + 5n - 14) = 0$

$2(n+7)(n-2) = 0$

$n+7 = 0 \quad n-2 = 0$

$$\frac{-7 \quad -7}{n=-7} \quad \frac{+2 \quad +2}{n=2}$$

9) $7x^2 + 26x + 15 = 0$

$7x^2 + 5x + 21x + 15 = 0$

$x(7x+5) + 3(7x+5) = 0$

$(7x+5)(x+3) = 0$

$7x+5 = 0 \quad x+3 = 0$

$$\frac{-5 \quad -5}{\frac{7x}{7} = \frac{-5}{7}} \quad \frac{-3 \quad -3}{x = -3}$$
$$x = -\frac{5}{7}$$

11) $5n^2 - 9n - 2 = 0$

$5n^2 - 10n + n - 2 = 0$

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

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

$n-2 = 0 \quad 5n+1 = 0$

$$\frac{+2 \quad +2}{n=2} \quad \frac{-1 \quad -1}{\frac{5n}{5} = \frac{-1}{5}}$$
$$n = -\frac{1}{5}$$

13) $x^2 - 4x - 8 = -8$

$\frac{+8 \quad +8}{x^2 - 4x = 0}$

$x(x-4) = 0$

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

$\frac{+4 \quad +4}{x=4}$

15) $x^2 - 4x - 1 = -5$

$\frac{+5 \quad +5}{x^2 - 4x + 4 = 0}$

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

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

$\frac{+4 \quad +4}{x=4} \quad \frac{+1 \quad +1}{x=1}$

17) $49p^2 + 371p - 241 = 0$

$7(7p^2 + 53p - 24) = 0$

$7(7p^2 - 3p + 56p - 24) = 0$

$7(p(7p-3) + 8(7p-3)) = 0$

$7(7p-3)(p+8) = 0$

$7p-3 = 0 \quad p+8 = 0$

$$\frac{+3 \quad +3}{\frac{7p}{7} = \frac{3}{7}} \quad \frac{-8 \quad -8}{p = -8}$$
$$p = \frac{3}{7}$$

$$19) 7x^2 + 17x - 20 = -8$$

$$\begin{array}{r} +8 \quad +8 \\ \hline 7x^2 + 17x - 12 = 0 \end{array}$$

$$7x^2 - 4x + 21x - 12 = 0$$

$$x(7x - 4) + 3(7x - 4) = 0$$

$$(7x - 4)(x + 3) = 0$$

$$7x - 4 = 0 \quad x + 3 = 0$$

$$\begin{array}{r} +4 \quad +4 \quad -3 \quad -3 \\ \hline \frac{7x}{7} = \frac{4}{7} \quad x = -3 \\ \hline x = \frac{4}{7} \end{array}$$

$$27) 35x^2 + 120x = -45$$

$$\begin{array}{r} +45 \quad +45 \\ \hline 35x^2 + 120x + 45 = 0 \end{array}$$

$$5(7x^2 + 24x + 9) = 0$$

$$5(7x^2 + 3x + 21x + 9) = 0$$

$$5(x(7x + 3) + 3(7x + 3)) = 0$$

$$5(7x + 3)(x + 3) = 0$$

$$7x + 3 = 0 \quad x + 3 = 0$$

$$\begin{array}{r} -3 \quad -3 \quad -3 \quad -3 \\ \hline \frac{7x}{7} = \frac{-3}{7} \quad x = -3 \\ \hline x = -\frac{3}{7} \end{array}$$

$$21) 7r^2 + 84 = -49r$$

$$\begin{array}{r} +49r \quad +49r \\ \hline 7r^2 + 49r + 84 = 0 \end{array}$$

$$7(r^2 + 7r + 12) = 0$$

$$7(r^2 + 7r + 12) = 0$$

$$7(r + 4)(r + 3) = 0$$

$$r + 4 = 0 \quad r + 3 = 0$$

$$\begin{array}{r} -4 \quad -4 \quad -3 \quad -3 \\ \hline r = -4 \quad r = -3 \end{array}$$

$$29) 4k^2 + 18k - 23 = 6k - 7$$

$$\begin{array}{r} -6k + 7 \quad -6k + 7 \\ \hline 4k^2 + 12k - 16 = 0 \end{array}$$

$$4(k^2 + 3k - 4) = 0$$

$$4(k + 4)(k - 1) = 0$$

$$k + 4 = 0 \quad k - 1 = 0$$

$$\begin{array}{r} -4 \quad -4 \quad +1 \quad +1 \\ \hline k = -4 \quad k = 1 \end{array}$$

$$23) x^2 - 6x = 16$$

$$\begin{array}{r} -16 \quad -16 \\ \hline x^2 - 6x - 16 = 0 \end{array}$$

$$(x - 8)(x + 2) = 0$$

$$x - 8 = 0 \quad x + 2 = 0$$

$$\begin{array}{r} +8 \quad +8 \quad -2 \quad -2 \\ \hline x = 8 \quad x = -2 \end{array}$$

$$31) 9x^2 - 46 + 7x = 7x + 8x^2 + 3$$

$$\begin{array}{r} -8x^2 - 3 \quad -7x \quad -7x \quad -8x^2 - 3 \\ \hline x^2 - 49 = 0 \end{array}$$

$$(x + 7)(x - 7) = 0$$

$$x + 7 = 0 \quad x - 7 = 0$$

$$\begin{array}{r} -7 \quad -7 \quad +7 \quad +7 \\ \hline x = -7 \quad x = 7 \end{array}$$

$$25) 3v^2 + 7v = 40$$

$$\begin{array}{r} -40 \quad -40 \\ \hline 3v^2 + 7v - 40 = 0 \end{array}$$

$$3v^2 + 15v - 8v - 40 = 0$$

$$3v(v + 5) - 8(v + 5) = 0$$

$$(v + 5)(3v - 8) = 0$$

$$v + 5 = 0 \quad 3v - 8 = 0$$

$$\begin{array}{r} -5 \quad -5 \quad +8 \quad +8 \\ \hline v = -5 \quad \frac{3v}{3} = \frac{8}{3} \\ \hline v = \frac{8}{3} \end{array}$$

$$33) 2m^2 + 19m + 40 = -2m$$

$$\begin{array}{r} +2m \quad +2m \\ \hline 2m^2 + 21m + 40 = 0 \end{array}$$

$$2m^2 + 4m + 16m + 40 = 0$$

$$m(2m + 5) + 8(2m + 5) = 0$$

$$(2m + 5)(m + 8) = 0$$

$$2m + 5 = 0 \quad m + 8 = 0$$

$$\begin{array}{r} -5 \quad -5 \quad -8 \quad -8 \\ \hline \frac{2m}{2} = \frac{-5}{2} \quad m = -8 \\ \hline m = -\frac{5}{2} \end{array}$$

$$\begin{aligned}
35) \quad & 40p^2 + 183p - 168 = p + 5p^2 \\
& \underline{-5p^2 \quad -p \quad -p - 5p^2} \\
& 35p^2 + 182p - 168 = 0 \\
& 7(5p^2 + 26p - 24) = 0 \\
& 7(5p^2 - 4p + 30p - 24) = 0 \\
& 7(p(5p - 4) + 6(5p - 4)) = 0 \\
& 7(5p - 4)(p + 6) = 0 \\
& 5p - 4 = 0 \quad p + 6 = 0 \\
& \underline{+4 \quad +4 \quad -6 \quad -6} \\
& \frac{5p}{5} = \frac{4}{5} \quad p = -6 \\
& p = \frac{4}{5}
\end{aligned}$$