

10 $x^2 - 12x + 27 = 0$

$$\begin{array}{r} 1 \cdot 1 \quad \begin{array}{r} 1 \quad -3 \\ 1 \quad -9 \end{array} \quad \begin{array}{l} 1 \cdot -27 \\ -3 \cdot -9 \end{array} \\ \hline 1 \quad -12 \quad 27 \end{array}$$

$(x-3)(x-9)$

$\hookrightarrow x-3=0$ $\hookrightarrow x-9=0$

$$\begin{array}{r} x-3=0 \\ +3 \quad +3 \\ \hline x=3 \end{array} \quad \begin{array}{r} x-9=0 \\ +9 \quad +9 \\ \hline x=9 \end{array}$$

$x=3$ $x=9$

11 $x^2 - 5x - 14 = 0$

$$\begin{array}{r} 1 \cdot 1 \quad \begin{array}{r} 1 \quad 2 \\ 1 \quad -7 \end{array} \quad \begin{array}{l} 1 \cdot -14 \\ -1 \cdot 14 \\ 2 \cdot -7 \\ -2 \cdot 7 \end{array} \\ \hline 1 \quad -5 \quad -14 \end{array}$$

$(x+2)(x-7)$

$\hookrightarrow x+2=0$ $\hookrightarrow x-7=0$

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

$x=-2$ $x=7$

12 $x^2 + x - 20 = 0$

$$\begin{array}{r} 1 \cdot 1 \quad \begin{array}{r} 1 \quad 5 \\ 1 \quad -4 \end{array} \quad \begin{array}{l} 1 \cdot -20 \\ -1 \cdot 20 \\ 4 \cdot -5 \\ -4 \cdot 5 \end{array} \\ \hline 1 \quad 1 \quad -20 \end{array}$$

$(x+5)(x-4)$

$\hookrightarrow x+5=0$ $\hookrightarrow x-4=0$

$$\begin{array}{r} x+5=0 \\ -5 \quad -5 \\ \hline x=-5 \end{array} \quad \begin{array}{r} x-4=0 \\ +4 \quad +4 \\ \hline x=4 \end{array}$$

$x=-5$ $x=4$

13 $x^2 - 3x - 40 = 0$

$$\begin{array}{r} 1 \cdot 1 \quad \begin{array}{r} 1 \quad -8 \\ 1 \quad 5 \end{array} \quad \begin{array}{l} 1 \cdot -40 \\ 4 \cdot -10 \\ -1 \cdot 40 \\ -4 \cdot 10 \\ 2 \cdot -20 \\ 5 \cdot -8 \\ -2 \cdot 20 \\ -5 \cdot 8 \end{array} \\ \hline 1 \quad -3 \quad -40 \end{array}$$

$(x-8)(x+5)$

$\hookrightarrow x-8=0$ $\hookrightarrow x+5=0$

$$\begin{array}{r} x-8=0 \\ +8 \quad +8 \\ \hline x=8 \end{array} \quad \begin{array}{r} x+5=0 \\ -5 \quad -5 \\ \hline x=-5 \end{array}$$

$x=8$ $x=-5$

14 $x^2 + 2x - 63 = 0$

$$\begin{array}{r} 1 \cdot 1 \quad \begin{array}{r} 1 \quad 9 \\ 1 \quad -7 \end{array} \quad \begin{array}{l} 1 \cdot -63 \\ 7 \cdot -9 \\ -1 \cdot 63 \\ -9 \cdot 7 \\ 3 \cdot -21 \\ -3 \cdot 21 \end{array} \\ \hline 1 \quad 2 \quad -63 \end{array}$$

$(x+9)(x-7)$

$\hookrightarrow x+9=0$ $\hookrightarrow x-7=0$

$$\begin{array}{r} x+9=0 \\ -9 \quad -9 \\ \hline x=-9 \end{array} \quad \begin{array}{r} x-7=0 \\ +7 \quad +7 \\ \hline x=7 \end{array}$$

$x=-9$ $x=7$

15 $x^2 + 10x - 75 = 0$

$$\begin{array}{r} 1 \cdot 1 \quad \begin{array}{r} 1 \quad 15 \\ 1 \quad -5 \end{array} \quad \begin{array}{l} 1 \cdot -75 \\ 5 \cdot -15 \\ -1 \cdot 75 \\ -15 \cdot 5 \\ 3 \cdot -25 \\ -3 \cdot 25 \end{array} \\ \hline 1 \quad 10 \quad -75 \end{array}$$

$(x+15)(x-5)$

$\hookrightarrow x+15=0$ $\hookrightarrow x-5=0$

$$\begin{array}{r} x+15=0 \\ -15 \quad -15 \\ \hline x=-15 \end{array} \quad \begin{array}{r} x-5=0 \\ +5 \quad +5 \\ \hline x=5 \end{array}$$

$x=-15$ $x=5$

16 $3x^2 + 31x + 36 = 0$

$$\begin{array}{r} 1 \cdot 3 \quad \begin{array}{r} 3 \quad 4 \\ 1 \quad 9 \end{array} \quad \begin{array}{l} 1 \cdot 36 \\ 2 \cdot 18 \\ 3 \cdot 6 \\ 4 \cdot 9 \end{array} \\ \hline 3 \quad 31 \quad 36 \end{array}$$

$(3x+4)(x+9)$

$\hookrightarrow 3x+4=0$ $\hookrightarrow x+9=0$

$$\begin{array}{r} 3x+4=0 \\ -4 \quad -4 \\ \hline 3x=-4 \\ \frac{3x}{3} = \frac{-4}{3} \\ x = -\frac{4}{3} \end{array} \quad \begin{array}{r} x+9=0 \\ -9 \quad -9 \\ \hline x=-9 \end{array}$$

$x = -\frac{4}{3}$ $x = -9$

17 $2x^2 - 19x + 24 = 0$

$$\begin{array}{r} 1 \cdot 2 \quad \begin{array}{r} 2 \quad -3 \\ 1 \quad -8 \end{array} \quad \begin{array}{l} 1 \cdot -24 \\ -2 \cdot -12 \\ -3 \cdot -8 \end{array} \\ \hline 2 \quad -19 \quad 24 \end{array}$$

$(2x-3)(x-8)$

$\hookrightarrow 2x-3=0$ $\hookrightarrow x-8=0$

$$\begin{array}{r} 2x-3=0 \\ +3 \quad +3 \\ \hline 2x=3 \\ \frac{2x}{2} = \frac{3}{2} \\ x = \frac{3}{2} \end{array} \quad \begin{array}{r} x-8=0 \\ +8 \quad +8 \\ \hline x=8 \end{array}$$

$x = \frac{3}{2}$ $x = 8$

18 $5x^2 + 23x + 26 = 0$

$$\begin{array}{r} 1 \cdot 5 \quad \begin{array}{r} 5 \quad 13 \\ 1 \quad 2 \end{array} \quad \begin{array}{l} 1 \cdot 26 \\ 2 \cdot 13 \end{array} \\ \hline 5 \quad 23 \quad 26 \end{array}$$

$(5x+13)(x+2)$

$\hookrightarrow 5x+13=0$ $\hookrightarrow x+2=0$

$$\begin{array}{r} 5x+13=0 \\ -13 \quad -13 \\ \hline 5x=-13 \\ \frac{5x}{5} = \frac{-13}{5} \\ x = -\frac{13}{5} \end{array} \quad \begin{array}{r} x+2=0 \\ -2 \quad -2 \\ \hline x=-2 \end{array}$$

$x = -\frac{13}{5}$ $x = -2$

$$\boxed{19} \quad 2x^2 - 11x + 15 = 0$$

$$\begin{array}{r} 1 \cdot 2 \quad 2 \quad -5 \quad -1 \cdot -15 \\ \swarrow \quad \quad \quad \searrow \\ 1 \quad -6 \quad -3 \\ \hline 2 \quad -11 \quad 15 \end{array}$$

$$(2x-5)(x-3)$$

$$\begin{array}{l} \hookrightarrow 2x-5=0 \\ \quad +5 \quad +5 \\ \hline 2x = 5 \\ \frac{2x}{2} = \frac{5}{2} \\ \boxed{x = \frac{5}{2}} \end{array} \quad \begin{array}{l} \hookrightarrow x-3=0 \\ \quad +3 \quad +3 \\ \hline x = 3 \\ \boxed{x = 3} \end{array}$$

$$\boxed{20} \quad 5x^2 + 28x + 32 = 0$$

$$\begin{array}{r} 1 \cdot 5 \quad 5 \quad 8 \quad 1 \cdot 32 \\ \swarrow \quad \quad \quad \searrow \\ 1 \quad 20 \quad 4 \\ \hline 5 \quad 28 \quad 32 \end{array}$$

$$(5x+8)(x+4)$$

$$\begin{array}{l} \hookrightarrow 5x+8=0 \\ \quad -8 \quad -8 \\ \hline 5x = -8 \\ \frac{5x}{5} = \frac{-8}{5} \\ \boxed{x = -\frac{8}{5}} \end{array} \quad \begin{array}{l} \hookrightarrow x+4=0 \\ \quad -4 \quad -4 \\ \hline x = -4 \\ \boxed{x = -4} \end{array}$$

$$\boxed{21} \quad x^2 - 14x + 49 = 0$$

$$\begin{array}{r} 1 \cdot 1 \quad 1 \quad -7 \quad -1 \cdot -7 \\ \swarrow \quad \quad \quad \searrow \\ 1 \quad -7 \quad -7 \\ \hline 1 \quad -14 \quad 49 \end{array}$$

$$(x-7)(x-7)$$

$$\hookrightarrow (x-7)^2$$

$$\begin{array}{l} \hookrightarrow x-7=0 \\ \quad +7 \quad +7 \\ \hline x = 7 \\ \boxed{x = 7} \end{array}$$

$$\boxed{22} \quad 9x^2 + 48x + 64 = 0$$

$$\begin{array}{r} 1 \cdot 9 \quad 3 \quad 8 \quad 1 \cdot 64 \\ 3 \cdot 3 \quad \swarrow \quad \quad \quad \searrow \\ 3 \quad 24 \quad 8 \\ \hline 9 \quad 48 \quad 64 \end{array}$$

$$(3x+8)(3x+8)$$

$$\hookrightarrow (3x+8)^2$$

$$\begin{array}{l} \hookrightarrow 3x+8=0 \\ \quad -8 \quad -8 \\ \hline 3x = -8 \\ \frac{3x}{3} = \frac{-8}{3} \\ \boxed{x = -\frac{8}{3}} \end{array}$$

$$\boxed{23} \quad 81x^2 + 36x + 4 = 0$$

$$\begin{array}{r} 1 \cdot 81 \quad 9 \quad 2 \quad 1 \cdot 4 \\ 3 \cdot 27 \quad \swarrow \quad \quad \quad \searrow \\ 9 \quad 18 \quad 2 \\ \hline 81 \quad 36 \quad 4 \end{array}$$

$$(9x+2)(9x+2)$$

$$\hookrightarrow (9x+2)^2$$

$$\begin{array}{l} \hookrightarrow 9x+2=0 \\ \quad -2 \quad -2 \\ \hline 9x = -2 \\ \frac{9x}{9} = \frac{-2}{9} \\ \boxed{x = -\frac{2}{9}} \end{array}$$

$$\boxed{24} \quad x^2 - 4 = 0$$

$$\begin{array}{r} 1 \cdot 1 \quad 1 \quad 2 \quad -1 \cdot 4 \\ \swarrow \quad \quad \quad \searrow \\ 1 \quad -2 \quad -2 \\ \hline 1 \quad 0 \quad -4 \end{array}$$

$$(x+2)(x-2)$$

$$\begin{array}{l} \hookrightarrow x+2=0 \\ \quad -2 \quad -2 \\ \hline x = -2 \\ \boxed{x = -2} \end{array} \quad \begin{array}{l} \hookrightarrow x-2=0 \\ \quad +2 \quad +2 \\ \hline x = 2 \\ \boxed{x = 2} \end{array}$$

$$\boxed{25} \quad 9x^2 - 1 = 0$$

$$\begin{array}{r} 1 \cdot 9 \quad 3 \quad 1 \quad 1 \cdot -1 \\ 3 \cdot 3 \quad \swarrow \quad \quad \quad \searrow \\ 3 \quad -3 \quad -1 \\ \hline 9 \quad 0 \quad -1 \end{array}$$

$$(3x+1)(3x-1)$$

$$\begin{array}{l} \hookrightarrow 3x+1=0 \\ \quad -1 \quad -1 \\ \hline 3x = -1 \\ \frac{3x}{3} = \frac{-1}{3} \\ \boxed{x = -\frac{1}{3}} \end{array} \quad \begin{array}{l} \hookrightarrow 3x-1=0 \\ \quad +1 \quad +1 \\ \hline 3x = 1 \\ \frac{3x}{3} = \frac{1}{3} \\ \boxed{x = \frac{1}{3}} \end{array}$$