

Exercises 5.2

1. Thus the quotient is $x + 1$ and the remainder is -11 .

$$\begin{array}{r} x + 1 \\ x + 3 \overline{) x^2 + 4x - 8} \\ \underline{x^2 + 3x} \\ x - 8 \\ \underline{x + 3} \\ -11 \end{array}$$

3. Thus the quotient is $x^2 - 4x + 22$ and the remainder is 93 .

$$\begin{array}{r} x^2 + 4x + 22 \\ x - 4 \overline{) x^3 + 0x^2 + 6x + 5} \\ \underline{x^3 - 4x^2} \\ 4x^2 + 6x \\ \underline{4x^2 - 16x} \\ 22x + 5 \\ \underline{22x - 88} \\ 93 \end{array}$$

5. Thus the quotient is $x + 2$, and the remainder is $8x - 1$.

$$\begin{array}{r} x + 2 \\ x^2 - 2x + 2 \overline{) x^3 + 0x^2 + 6x + 3} \\ \underline{x^3 - 2x^2 + 2x} \\ 2x^2 + 4x + 3 \\ \underline{2x^2 - 4x + 4} \\ 8x - 1 \end{array}$$

7. Thus the quotient is $3x + 1$, and the remainder is $7x - 5$.

$$\begin{array}{r} 3x + 1 \\ 2x^2 + 0x + 5 \overline{) 6x^3 + 2x^2 + 22x + 0} \\ \underline{6x^3 + 15x} \\ 2x^2 + 7x + 0 \\ \underline{2x^2 + 5} \\ 7x - 5 \end{array}$$

9. Thus the quotient is $x^4 + 1$, and the remainder is 0 .

$$\begin{array}{r} x^4 \\ x^2 + 1 \overline{) x^6 + 0x^5 + x^4 + 0x^3 + x^2 + 0x + 1} \\ \underline{x^6 + x^4} \\ 0 + x^2 + 1 \\ \underline{x^2 + 1} \\ 0 \end{array}$$

11. The synthetic division table for this problem takes the following form.

$$\begin{array}{r|rrrr} 3 & 1 & -5 & 4 & \\ & & 3 & -6 & \\ \hline & 1 & -2 & -2 & \end{array} \quad \text{Thus the quotient is } x - 2, \text{ and the remainder is } -2.$$