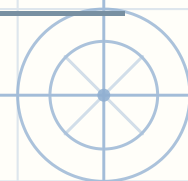


Dividing polynomials — Exact division

Name: _____

Date: _____

Divide each polynomial. Every one divides exactly, so every remainder is 0.



$$\begin{array}{r} \textcircled{1} \quad \begin{array}{r} x^2 - 4x - 5 \\ x - 4 \overline{) x^3 - 8x^2 + 11x + 20} \\ \underline{-x^3 + 4x^2} \\ -4x^2 + 11x + 20 \\ \underline{4x^2 - 16x} \\ -5x + 20 \\ \underline{5x - 20} \\ 0 \end{array} \end{array}$$

$$\begin{array}{r} \textcircled{2} \quad \begin{array}{r} x^2 + x + 4 \\ x + 5 \overline{) x^3 + 6x^2 + 9x + 20} \\ \underline{-x^3 - 5x^2} \\ x^2 + 9x + 20 \\ \underline{-x^2 - 5x} \\ 4x + 20 \\ \underline{-4x - 20} \\ 0 \end{array} \end{array}$$

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

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

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

$$\begin{array}{r} \textcircled{6} \quad \begin{array}{r} x^2 - 4x - 5 \\ x - 2 \overline{) x^3 - 6x^2 + 3x + 10} \\ \underline{-x^3 + 2x^2} \\ -4x^2 + 3x + 10 \\ \underline{4x^2 - 8x} \\ -5x + 10 \\ \underline{5x - 10} \\ 0 \end{array} \end{array}$$

$$\begin{array}{r} \textcircled{7} \quad \begin{array}{r} x^2 - 5x + 1 \\ x - 3 \overline{) x^3 - 8x^2 + 16x - 3} \\ \underline{-x^3 + 3x^2} \\ -5x^2 + 16x - 3 \\ \underline{5x^2 - 15x} \\ x - 3 \\ \underline{-x + 3} \\ 0 \end{array} \end{array}$$

$$\begin{array}{r} \textcircled{8} \quad \begin{array}{r} x^2 + 2x + 4 \\ x - 3 \overline{) x^3 - x^2 - 2x - 12} \\ \underline{-x^3 + 3x^2} \\ 2x^2 - 2x - 12 \\ \underline{-2x^2 + 6x} \\ 4x - 12 \\ \underline{-4x + 12} \\ 0 \end{array} \end{array}$$



Dividing polynomials · Exact division — Answer key

1. $(x^3 - 8x^2 + 11x + 20) \div (x - 4) = x^2 - 4x - 5$

2. $(x^3 + 6x^2 + 9x + 20) \div (x + 5) = x^2 + x + 4$

3. $(x^3 + x^2 - 6x - 8) \div (x + 2) = x^2 - x - 4$

4. $(x^3 + x^2 + 2x - 4) \div (x - 1) = x^2 + 2x + 4$

5. $(x^3 - x^2 - 6x - 4) \div (x + 1) = x^2 - 2x - 4$

6. $(x^3 - 6x^2 + 3x + 10) \div (x - 2) = x^2 - 4x - 5$

7. $(x^3 - 8x^2 + 16x - 3) \div (x - 3) = x^2 - 5x + 1$

8. $(x^3 - x^2 - 2x - 12) \div (x - 3) = x^2 + 2x + 4$

