

**Divide using Synthetic Division:**

1.  $(5x^3 - 8x^2 - x - 4) \div (x - 2)$

$$\begin{array}{r|rrrr} 2 & 5 & -8 & -1 & -4 \\ & \downarrow & 10 & 4 & 6 \\ \hline & 5 & 2 & 3 & 2 \end{array}$$

$$5x^2 + 2x + 3 + \frac{2}{x-2}$$

2.  $(6x^3 + 16x^2 + 3x - 2) \div (x + 1)$

$$\begin{array}{r|rrrr} -1 & 6 & 16 & 3 & -2 \\ & \downarrow & -6 & -10 & 7 \\ \hline & 6 & 10 & -7 & 5 \end{array}$$

$$6x^2 + 10x - 7 + \frac{5}{x+1}$$

3.  $(x^3 + 7x^2 + 5x + 35) \div (x + 7)$

$$= x^2 + 5$$

4.  $(7x^3 + 9x^2 + 13) \div (x - 3)$

$$= 7x^2 + 30x + 90 + \frac{283}{x-3}$$

5.  $(4x^3 + 5x^2 + 2x + 16) \div (x + 2)$

$$= 4x^2 - 3x + 8$$

6.  $(2x^3 - 22x^2 + 3x - 33) \div (x - 11)$

$$= 2x^2 + 3$$

7.  $(4x^4 + 2x^2 - 3x - 9) \div (x + 1)$

$$= 4x^3 - 4x^2 + 6x - 9$$

8.  $(6x^3 - 5x^2 - 3x + 2) \div \left(x - \frac{1}{2}\right)$

$$= 6x^2 - 2x - 4$$

9.  $(3x^3 - x + 7) \div (x + 3)$

$$= 3x^2 - 9x + 26 - \frac{71}{x+3}$$

10.  $(6x^3 - 4x^2 + 2x + 17) \div (x - 4)$

$$= 6x^2 + 20x + 82 + \frac{345}{x-4}$$

11.  $(4x^2 - 6x + 6) \div (x + 1)$

$$= 4x - 10 + \frac{16}{x+1}$$

12.  $(20x^3 + 16x^2 + x - 2) \div (2x - 1)$

$$= 20x^2 + 26x + 14 + \frac{5}{2x-1}$$