

Dividing Polynomials Using Synthetic Division

Divide using synthetic division method

1 $(2x^3 + 6x^2 + 29) \div (x + 4)$

2 $(9x^3 - 47x^2 + 2x + 35) \div (x - 5)$

$$\begin{array}{r|rrrr}
 -4 & 2 & 6 & 0 & 29 \\
 & \downarrow & \downarrow & \downarrow & \downarrow \\
 & & -8 & 8 & -32 \\
 \hline
 & 2 & -2 & 8 & -3
 \end{array}$$

$$2x^2 - 2x + 8 + \frac{-3}{x + 4}$$

3 $(12x^3 + 38x^2 - 16x - 20) \div (6x - 5)$

4 $(x^3 + 8x^2 + 10x + 21) \div (x + 7)$

5 $(4x^4 - 15x^3 - 28x^2 + 6x + 3) \div (4x + 1)$

6 $(16x^4 + 8x^3 - 2x^2 - 2) \div (2x + 4)$

7 $(7x^4 - 68x^3 + 46x^2 - 7x - 18) \div (x - 9)$

8 $(x^4 + 2x^3 - 87x^2 - 68x + 13) \div (x + 10)$

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Answers

1 $(2x^3 + 6x^2 + 29) \div (x + 4)$

$$\begin{array}{r|rrrr} -4 & 2 & 6 & 0 & 29 \\ & \downarrow & -8 & \downarrow & 8 & \downarrow & -32 & \downarrow \\ \hline & 2 & -2 & 8 & -3 \end{array}$$

$$\frac{2x^2 - 2x + 8 + \frac{-3}{x + 4}}{\quad}$$

2 $(9x^3 - 47x^2 + 2x + 35) \div (x - 5)$

$$\frac{9x^2 - 2x - 8 + \frac{-5}{x - 5}}{\quad}$$

3 $(12x^3 + 38x^2 - 16x - 20) \div (6x - 5)$

$$\frac{2(x^2 + 4x + 2)}{\quad}$$

4 $(x^3 + 8x^2 + 10x + 21) \div (x + 7)$

$$\frac{x^2 + x + 3}{\quad}$$

5 $(4x^4 - 15x^3 - 28x^2 + 6x + 3) \div (4x + 1)$

$$\frac{x^3 - 4x^2 - 6x + 3}{\quad}$$

6 $(16x^4 + 8x^3 - 2x^2 - 2) \div (2x + 4)$

$$\frac{8x^3 - 12x^2 + 23x - 46 + \frac{182}{2x + 4}}{\quad}$$

7 $(7x^4 - 68x^3 + 46x^2 - 7x - 18) \div (x - 9)$

$$\frac{7x^3 - 5x^2 + x + 2}{\quad}$$

8 $(x^4 + 2x^3 - 87x^2 - 68x + 13) \div (x + 10)$

$$\frac{x^3 - 8x^2 - 7x + 2 + \frac{-7}{x + 10}}{\quad}$$