

Answer on Question #42514 – Math - Algebra

Task: Divide using synthetic division, and write a summary statement in fraction form.

two x to the fifth minus x to the fourth plus three x squared minus x plus five divided by quantity x minus one;

$2x^4 + x^3 + 4x^2 + 3x + 8$ divided by quantity x minus one;

$2x^4 + x^3 - x^2 + 2x + 1 + 6$ divided by quantity x minus one;

$2x^4 + x^3 + x^2 + 4x + 3 + 8$ divided by quantity x minus one;

$2x^4 - 3x^3 + x + 6$ divided by quantity x minus one.

Solution:

$$\begin{aligned} & 2x^5 - x^4 + 3x^2 - x + \frac{5}{x-1} = \frac{(2x^5 - x^4 + 3x^2 - x)(x-1) + 5}{x-1} = \\ \bullet & = \frac{2x^6 - x^5 + 3x^3 - x^2 - 2x^5 + x^4 - 3x^2 + x + 5}{x-1} = \frac{2x^6 - 3x^5 + x^4 + 3x^3 - 4x^2 + x + 5}{x-1}. \end{aligned}$$

$$\begin{aligned} & 2x^4 + x^3 + 4x^2 + 3x + \frac{8}{x-1} = \frac{(2x^4 + x^3 + 4x^2 + 3x)(x-1) + 8}{x-1} = \\ \bullet & = \frac{2x^5 + x^4 + 4x^3 + 3x^2 - 2x^4 - x^3 - 4x^2 - 3x + 8}{x-1} = \frac{2x^5 - x^4 + 3x^3 - x^2 - 3x + 8}{x-1}. \end{aligned}$$

$$\begin{aligned} & 2x^4 + x^3 - x^2 + 2x + 1 + \frac{6}{x-1} = \frac{(2x^4 + x^3 - x^2 + 2x + 1)(x-1) + 6}{x-1} = \\ \bullet & \frac{2x^5 + x^4 - x^3 + 2x^2 + x - 2x^4 - x^3 + x^2 - 2x - 1 + 6}{x-1} = \frac{2x^5 - x^4 - 2x^3 + 3x^2 - x + 5}{x-1}. \end{aligned}$$

$$\begin{aligned} & 2x^4 + x^3 + x^2 + 4x + 3 + \frac{8}{x-1} = \frac{(2x^4 + x^3 + x^2 + 4x + 3)(x-1) + 8}{x-1} = \\ \bullet & = \frac{2x^5 + x^4 + x^3 + 4x^2 + 3x - 2x^4 - x^3 - x^2 - 4x - 3 + 8}{x-1} = \frac{2x^5 - x^4 + 3x^2 - x + 5}{x-1}. \end{aligned}$$

$$\begin{aligned} & 2x^4 - 3x^3 + x + \frac{6}{x-1} = \frac{(2x^4 - 3x^3 + x)(x-1) + 6}{x-1} = \frac{2x^5 - 3x^4 + x^2 - 2x^4 + 3x^3 - x + 6}{x-1} = \\ \bullet & = \frac{2x^5 - 5x^4 + 3x^3 + x^2 - x + 6}{x-1}. \end{aligned}$$