

Basic Mathematics - Quiz 6 Solution

Perform the (long) division of P by Q where $P(x) = -2x^4 + x^3 + 2x^2 - 2x + 3$ and $Q(x) = x^2 - x + 2$.

$$\begin{array}{r} -2x^2 - x + 5 \\ x^2 - x + 2 \overline{) -2x^4 + x^3 + 2x^2 - 2x + 3} \\ \underline{-(-2x^4 + 2x^3 - 4x^2)} \\ \phantom{x^2 - x + 2 \overline{) }} -x^3 + 6x^2 - 2x \\ \underline{-(-x^3 + x^2 - 2x)} \\ \phantom{x^2 - x + 2 \overline{) }} 5x^2 + 0x + 3 \\ \underline{-(5x^2 - 5x + 10)} \\ \phantom{x^2 - x + 2 \overline{) }} 5x - 7 \end{array}$$

so we have $-2x^4 + x^3 + 2x^2 - 2x + 3 = (x^2 - x + 2) \times (-2x^2 - x + 5) + (5x - 7)$.