

Bepaal p en q zó dat $f(x)$ deelbaar is door $g(x)$. $f(x) = 2x^3 - px^2 - 3qx + 5$

$$g(x) = x^2 - 2x + 1$$

Oplossing:

→ 1) Deling:

The image shows a handwritten polynomial long division. On the left, the dividend $2x^3 - px^2 - 3qx + 5$ is divided by the divisor $x^2 - 2x + 1$. The first step shows subtracting $2x^3 - 4x^2 + 2x$ from the dividend, resulting in $(4-p)x^2 - (3q+2)x + 5$. The second step shows subtracting $(4-p)x^2 - 2(4-p)x + 4-p$ from the remainder, resulting in $(-3q-2+8-2p)x + 1+p$. On the right, the divisor $x^2 - 2x + 1$ is written above a horizontal line, with the first term of the quotient $2x + (4-p)$ written below it.

→ 2) $f(x)$ is deelbaar door $g(x)$

$$\Leftrightarrow \text{rest} = 0$$

$$\Leftrightarrow \begin{cases} -3q - 2 + 8 - 2p = 0 \\ 1 + p = 0 \end{cases}$$

$$\Leftrightarrow \begin{cases} 3q + 2p = 6 & (1) \\ p = -1 & (2) \end{cases}$$

$$\text{Uit (2) in (1): } 3q - 2 = 6 \Leftrightarrow q = \frac{8}{3}$$

Antwoord: $f(x)$ is deelbaar door $g(x)$ als $p = -1$ en $q = 8/3$.