

1. Exercise:

Determine the domain of the following function and investigate for continuity:

$$f(x) = \begin{cases} x - 2 & \text{for } |x| > 2 \\ \frac{x^2 - x - 2}{x + 2} & \text{for } |x| \leq 2 \end{cases}$$

2. Exercise:

Decompose the following polynomials into factors:

(a) $P(x) = x^2 - x - 6$

(b) $Q(x) = x^4 - x^3 - 4x^2 - 2x - 12$