Exercise 25

Explain, using Theorems 4, 5, 7, and 9, why the function is continuous at every number in its domain. State the domain.

$$F(x) = \frac{2x^2 - x - 1}{x^2 + 1}$$

Solution

$F(x)$ is a rational function, and according to Theorem 5 all rational functions are continuous wherever they are defined. Since the denominator is never zero for any value of x, the domain is

$$(-\infty, \infty).$$