1. Evaluate the difference quotient for 

\[ f(x) = x^3, \quad \frac{f(a + h) - f(a)}{h} \]

and simplify your answer.

Here \( f(a + h) = (a + h)^3 = a^3 + 3a^2h + 3ah^2 + h^3 \) and \( f(a) = a^3 \), so \( f(a + h) - f(a) = 3a^2h + 3ah^2 + h^3 \) and the difference quotient is

\[ \frac{3a^2h + 3ah^2 + h^3}{h} = 3a^2 + 3ah + h^2. \]

2. Write an equation for the line passing through \((1, 2)\) that is parallel to the line given by \(2x - 3y = 1\).

Rewriting the given line’s equation gives \(3y = 2x - 1\), and solving for \(y\) gives \(y = \frac{2}{3}x - \frac{1}{3}\). From this equation we can easily see the slope here is \(2/3\). Since parallel lines have the same slope, we need an equation for the line through \((1, 2)\) with slope \(2/3\). The simplest way to proceed here is to use point-slope form:

\[ (y - 2) = \frac{2}{3}(x - 1). \]

3. Express the function \(G(x) = \sqrt[3]{\frac{x}{1 + x}}\) in the form \(f \circ g\).

This is a composition of the cube root function, \(f(x) = \sqrt[3]{x}\), and the function \(g(x) = \frac{x}{1 + x}\).