IB$_1$ **Maths SL Test 7**

Wednesday 4 June 2025

Subject: *Domain & composite functions*

Question 1

Find the *domain* of the following functions

1) $f_1(x) = \dfrac{31x^5 - 17\left(1+\frac{2}{3}\right)^8 + x(x+1)(x+2) - 22}{17}$

2) $f_2(x) = \dfrac{(x-1)(x+2)(x-3)}{\sqrt[3]{x}\,(x+1)^2}$

3) $f_3(x) = \dfrac{\sqrt{x-1}}{(x-2)(x+3)}$

4) $f_4(x) = \dfrac{\sqrt[4]{\frac{x}{2}-4}}{\sqrt[6]{9-x}}$

5) $f_5(x) = \dfrac{13\sqrt{5-x}}{x} - \dfrac{18}{5}\dfrac{\log_5(x-2)}{x-1}$

Question 2

Given $f(x) = \dfrac{4x}{2x+1}$ and $g(x) = \dfrac{1-x}{2}$

1) Find the *composite function* $(f \circ g)(x)$

2) Find the *product function* $(f.g)(x)$

3) Bonus : Solve $(f \circ g)(x) = (f.g)(x)$