④ $f(x) = |x-1|$

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

We have

$f \circ g(-1) = f(g(-1))$

Because $g(-1) = 1-(-1)^2 = 1-1 = 0$, we get

$f \circ g(-1) = f(0) = |0-1| = 1.$

㉔

$f(x) = \dfrac{2x}{x^2-4}$

$f \circ f(x) = f(f(x)) = \dfrac{2f(x)}{f(x)^2-4} = \dfrac{2\dfrac{2x}{x^2-4}}{\left(\dfrac{2x}{x^2-4}\right)^2-4}$

$= \dfrac{\dfrac{4x}{x^2-4}}{\dfrac{4x^2}{(x^2-4)^2}-4} = \dfrac{\dfrac{4x}{x^2-4}}{\dfrac{4x^2-4(x^2-4)^2}{(x^2-4)^2}}$

$= \dfrac{4x}{x^2-4} \dfrac{(x^2-4)^2}{-4x^4+36x^2-64} = \dfrac{4x(x^2-4)}{-4x^4+36x^2-64}$

$= \boxed{\dfrac{x(x^2-4)}{-x^4+9x^2-16}}$