Realiza la composición $(f\circ g)(x)$ y $(g\circ f)(x)$ de la siguiente pareja de funciones.

a) $f(x)=\frac{1}{x}$, $g(x)=\frac{1}{x-2}$

b) $f(x)=x^2-x-2$, $g(x)=\sqrt{2x-4}$

c) $f(x)=\frac{x+3}{x-3}$, $g(x)=\frac{x^2-1}{x}$

a) $f(x)=\frac{1}{x}$, $g(x)=\frac{1}{x-2}$

$(f\circ g)(x)=f(\frac{1}{x-2})=\frac{1}{\frac{1}{x-2}}=x-2$, $(g\circ f)(x)=g(\frac{1}{x})=\frac{1}{\frac{1}{x}-2}=\frac{x}{1-2x}$

b) $f(x)=x^2-x-2$, $g(x)=\sqrt{2x-4}$

$(f\circ g)(x)=f(\sqrt{2x-4})=(\sqrt{2x-4})^2-\sqrt{2x-4}-2=2x-4-\sqrt{2x-4}-2=2x-\sqrt{2x-4}-6$

$(g\circ f)(x)=g(x^2-x-2)=\sqrt{2(x^2-x-2)-4}=\sqrt{2x^2-2x-8}$

c) $f(x)=\frac{x+3}{x-3}$, $g(x)=\frac{x^2-1}{x}$

$(f\circ g)(x)=f(\frac{x^2-1}{x})=\frac{\frac{x^2-1}{x}+3}{\frac{x^2-1}{x}-3}=\frac{x^2+3x-1}{x^2-3x-1}$

$(g\circ f)(x)=g(\frac{x+3}{x-3})=\frac{(\frac{x+3}{x-3})^2-1}{\frac{x+3}{x-3}}=\frac{\frac{(x+3)^2-(x-3)^2}{(x-3)^2}}{\frac{x+3}{x-3}}=\frac{12x}{(x-3)(x+3)}=\frac{12x}{x^2-9}$