Act 4

1 $D_{f\circ g} = \mathbb{R}$

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$D_{f\circ k} = \mathbb{R}\setminus\{2\}$

$D_{k\circ f} = \mathbb{R}\setminus\{\frac{1}{3}\}$

$D_{k\circ k} = \mathbb{R}\setminus\{-4;2\}$!

2 (a) $f\circ g(x) = f(g(x)) = f(\sqrt{x}) = (\sqrt{x})^2 - 16 = x - 16$

$x \xrightarrow{g} \sqrt{x} \xrightarrow{f} (\sqrt{x})^2 - 16$ donc $f\circ g(x) = x - 16$

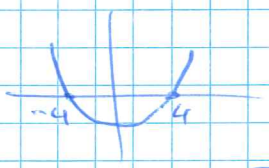
$f\circ g$

$D_{f\circ g} = \mathbb{R}^+ \cap \mathbb{R} = \mathbb{R}^+$

(b) $g\circ f(x) = g(x^2-16) = \sqrt{x^2-16}$

$x \xrightarrow{f} x^2-16 \xrightarrow{g} \sqrt{x^2-16}$

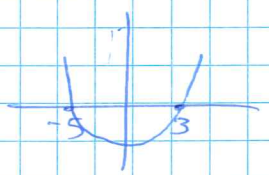
$D_{g\circ f} = \mathbb{R} \cap \left(]-\infty;-4] \cup [4;+\infty[\right)$



donc $g\circ f(x) = \sqrt{x^2-16}$

3 (a) $x \xrightarrow{k} x^2+2x \xrightarrow{h} \sqrt{x^2+2x-15} = \sqrt{(x+5)(x-3)}$

$h\circ k$



$D_{h\circ k} = \mathbb{R} \cap \left(]-\infty;-5] \cup [3;+\infty[\right)$

(b) $x \xrightarrow{h} \sqrt{x-15} \xrightarrow{k} (\sqrt{x-15})^2 + 2\sqrt{x-15}$

$k\circ h$

$D_{k\circ h} = [15;+\infty[\cup [15;+\infty[= [15;+\infty[$