20/9/2019 FUNZIONI COMPOSTE

461 $f(x) = 2^x$; $g(x) = \sqrt{x} - 2$. $\left[f \circ g = 2^{\sqrt{x}-2};\ g \circ f = \sqrt{2^x} - 2\right]$

462 $f(x) = \ln 2x$; $g(x) = e^{-x}$. $\left[f \circ g = -x + \ln 2;\ g \circ f = \frac{1}{2x}\right]$

461

$$\boxed{\begin{array}{l} f: A \to B \qquad g: B \to C \\ g \circ f : A \to C \quad (\text{in realtà è sufficiente che } \operatorname{im} f \subseteq \operatorname{dom} g) \end{array}}$$

$f: \mathbb{R} \to \mathbb{R}^+ \qquad g: \mathbb{R}^+ \to \mathbb{R}$

$f(x) = 2^x \qquad g(x) = \sqrt{x} - 2$

$g \circ f : \mathbb{R} \to \mathbb{R}$

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

$f \circ g : \mathbb{R}^+ \to \mathbb{R}^+$

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

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462] $f(x) = \ln 2x$ $\qquad$ $g(x) = e^{-x}$

$f: \mathbb{R}^+ \to \mathbb{R}$ $\qquad$ $g: \mathbb{R} \to \mathbb{R}^+$

$g \circ f : \mathbb{R}^+ \to \mathbb{R}^+$ $\qquad$ $(g \circ f)(x) = g(f(x)) =$

$= e^{-\ln 2x} = e^{\ln (2x)^{-1}} =$

$= (2x)^{-1} = \dfrac{1}{2x}$

$f \circ g : \mathbb{R} \to \mathbb{R}$ $\qquad$ $(f \circ g)(x) = f(g(x)) =$

$= \ln 2e^{-x} =$

$= \ln 2 + \ln e^{-x} =$

$= \ln 2 - x$