

September 26, 2016
 * Quiz # 5 - Wednesday
 • Algebra of Functions

Sep 26-10:56 AM

9.5 $g(x) = \frac{1}{x+1}$ & $h(x) = \frac{2}{x}$
 #49) $(h \circ h)(x) = \frac{2}{(h(x))}$
 $= \frac{2}{\frac{2}{x}}$
 $= \frac{2}{1} \cdot \frac{x}{2}$
 $= \frac{2}{1} \cdot \frac{x}{2} = x$

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#50) $(g \circ g)(x) = \frac{1}{(g(x))+1}$
 Domain of $(g \circ g)(x)$
 $(-\infty, -2) \cup (-2, \infty)$
 $= \frac{1}{\frac{1}{x+1} + 1}$
 $= \frac{1}{\frac{1+x+1}{x+1}}$
 $= \frac{1 \cdot x+1}{2+x+1}$
 $= \frac{x+1}{2+x}$

Sep 26-11:09 AM

$(g \circ h \circ g)(x)$
 $= \frac{1}{\left(\frac{2}{(h(x))}\right)+1} = \frac{1}{\left(\frac{2}{\frac{1}{x+1}+1}\right)+1}$

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$\frac{1}{\left(\frac{2}{x}\right)+1} = \frac{1}{\left(\frac{2}{\frac{1}{x+1}}\right)+1}$
 $\frac{\frac{2}{1} \cdot \frac{x+1}{1}}{\frac{2x+2}{1}} = \frac{1}{2x+2+1}$
 $= \frac{1}{2x+3}$

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The Difference Quotient
 $\frac{f(x+h) - f(x)}{h}$

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