W3&4 – Combinations of Functions and Inverse Functions

MHF4U

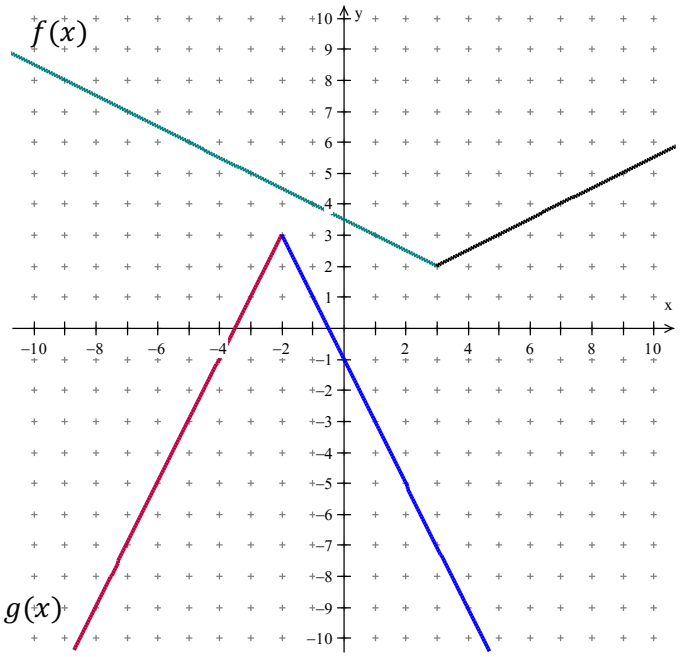
1) Let $f(x) = 3x - 5$ and $g(x) = 2x + 3$.

a) Write the equation for $h(x) = f(x) + g(x)$ and determine the value of $h(2)$.

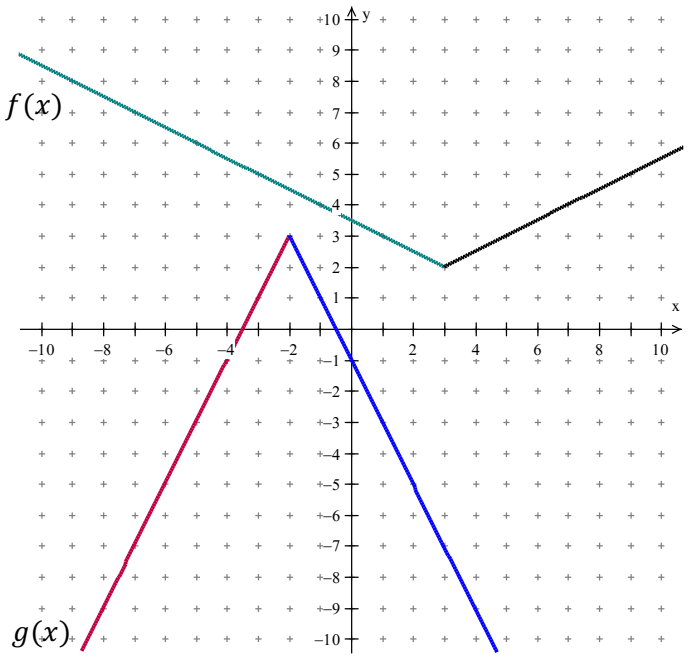
b) Write the equation for $k(x) = f(x) - g(x)$ and determine the value of $k(2)$.

2) Use the functions $f(x)$ and $g(x)$ as shown. Apply the superposition principle to graph

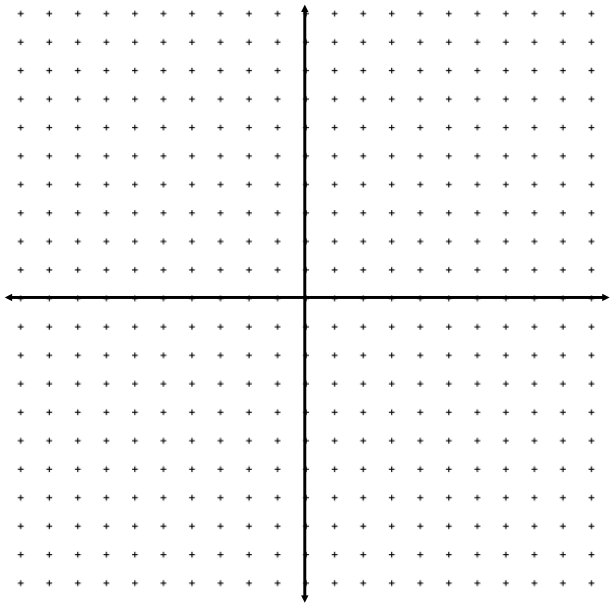
a) $y = f(x) + g(x)$



b) $y = f(x) - g(x)$.

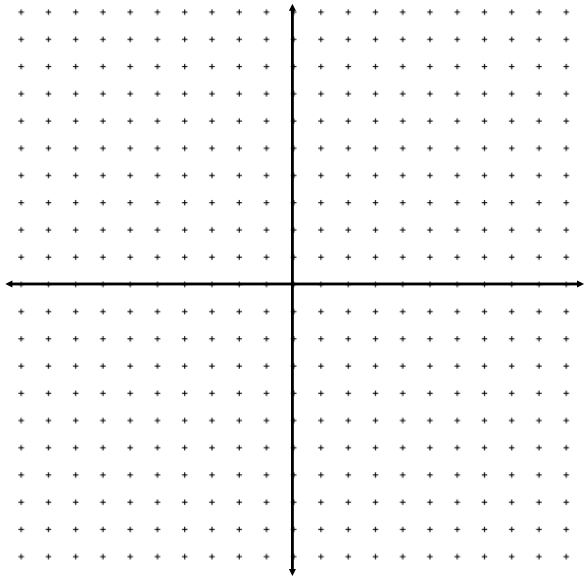


3) Let $f(x) = x - 2$ and $g(x) = x^2 + 3x - 3$. Determine an algebraic and graphical model for $h(x) = f(x) + g(x)$.

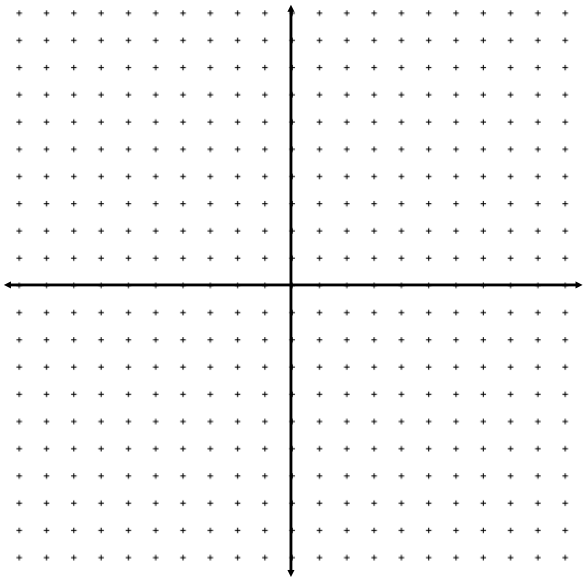


4) Let $f(x) = x - 2$ and $g(x) = x^2 - 4$. Develop an algebraic and graphical model for each of the following:

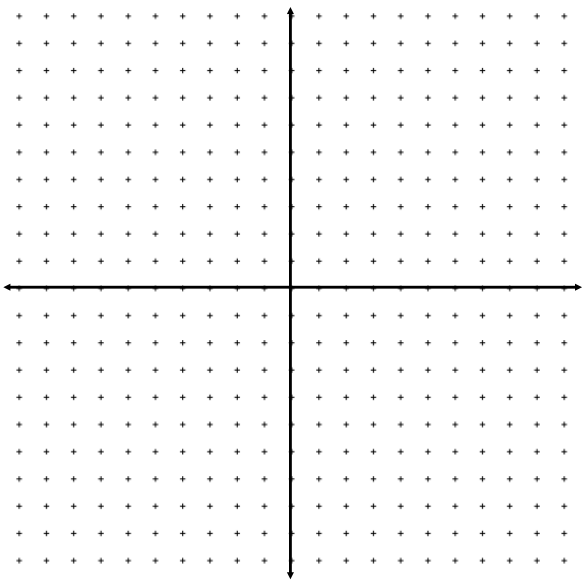
a) $y = f(x)g(x)$



b) $y = \frac{f(x)}{g(x)}$



c) $y = \frac{g(x)}{f(x)}$



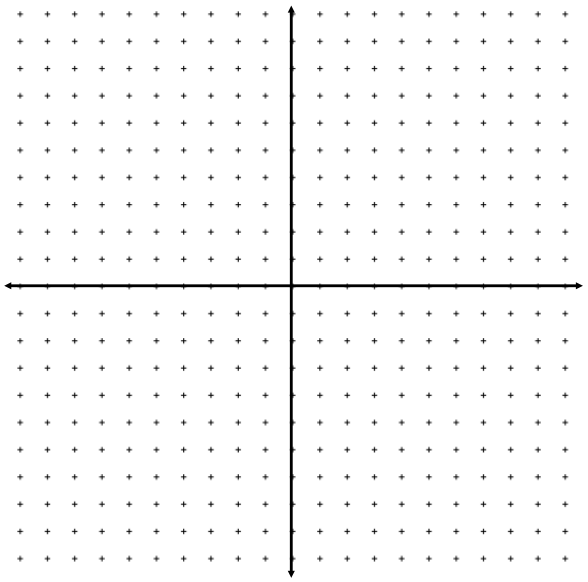
5) Let $f(x) = x^2 + 2x - 4$ and $g(x) = \frac{1}{x+1}$.

a) Evaluate $g\big(f(0)\big)$

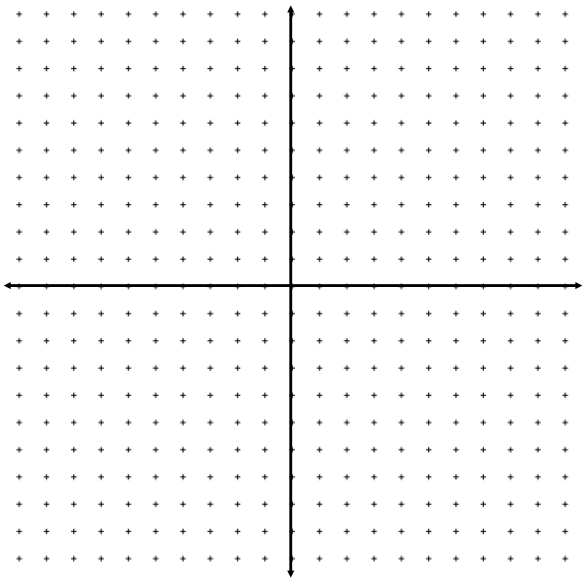
b) Evaluate $f\big(g(-2)\big)$

6) Let $f(x) = x^2 + 3x$ and $g(x) = 2x - 5$. Determine an equation for each composite function and graph it.

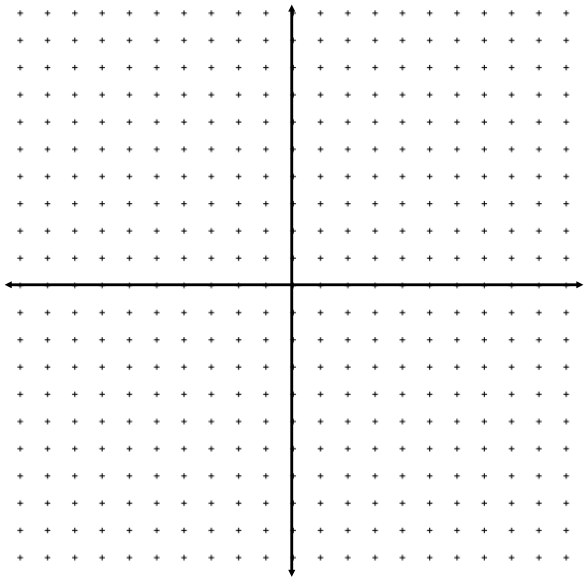
a) $y = f\big(g(x)\big)$



b) $y = g\big(f(x)\big)$



c) $y = g\big(g(x)\big)$



d) $y = g^{-1}\big(g(x)\big)$