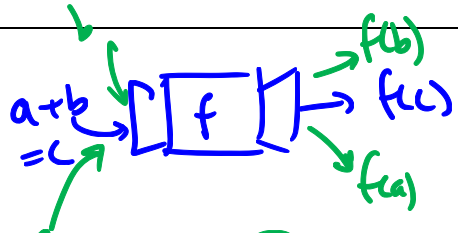


Functions Cover Page; What I know and can do

Question	First Day	Last Day
What is a function?		a rule that an input and gives exactly one output
If $f(x) = 2g(x) - 3$ and $f(2) = 5$ then what point must be on g ? (reasoning)		$f(2) = 2g(2) - 3 = 5$ $g(2) = 4$ $\Rightarrow (2, 4)$
What is a composition of functions?		take the output of one function and make it an input of another
In general, why does $f(a + b) \neq f(a) + f(b)$ (reasoning & solving)		 <p> $\sqrt{2} \neq 2$ $f(a) = \sqrt{x}$ $a=1$ $b=1$ </p>
What is a translation?		when a transformation moves \mathbb{R}^2 vertically / horizontally by a <u>shift</u>

<p>How has space been transformed if $(x, y) \mapsto (x - 2, y + 3)$</p> <p>(solving)</p>		<p>shift space left 2 shift up 3</p>
<p>What is a reflection or stretch?</p>		<p>reflection we flip over an axis</p> <p>stretch where size increases or decreases (expand/compress)</p>
<p>If the following transformation occurred to f $g(x) = 2f(3x)$</p> <p>And f had a maximum at the point $(6, 12)$, where would g have a max or min?</p> <p>(reasoning)</p>		<p>vert exp 2 horiz-comp 3</p> <p>$(6, 12) \mapsto (2, 24)$ max (no reflection)</p>
<p>What is an inverse?</p>		<p>reflection over $y=x$ input and output are switched</p> <p>undoes f. $f(f^{-1}(x)) = x$</p>
<p>Determine the inverse of the following function (assume function g and h have inverses) $f(x) = 2g\left(\frac{h(x) - 1}{3}\right)$</p> <p>(communication)</p>		<p>$y = 2g\left(\frac{h(x) - 1}{3}\right)$</p> <p>$h^{-1}\left(3g^{-1}\left(\frac{y}{2}\right) + 1\right) = x$</p> <p>$f^{-1}(x) = h^{-1}\left[3g^{-1}\left(\frac{x}{2}\right) + 1\right]$</p>

