

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. **GOOD LUCK!!**

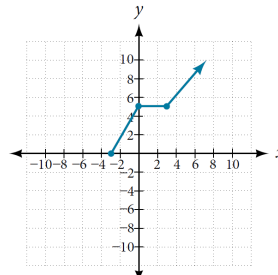
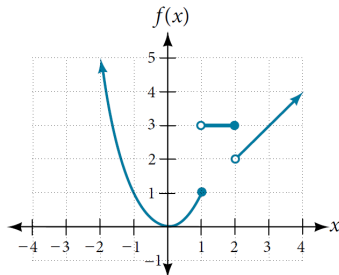
1. [2 points] If $f(x) = x^3$ and $g(x) = 5x + 7$, find $(f \circ g)(x)$.

2. [2 points] If $f(x)$ and $g(x)$ are specified by the tables shown, find $(f \circ g)(3)$.

x	0	7	14	21
$f(x)$	-1	12	3	2

x	1	3	5	7
$g(x)$	0	7	2	11

3. [2 points] If $f(x)$ and $g(x)$ are specified by the graphs shown below, find $(f \circ g)(-2)$.



4. [4 points] Suppose $f(x) = \frac{1}{x-3}$ and $g(x) = \frac{1}{x-1}$. Find the following:

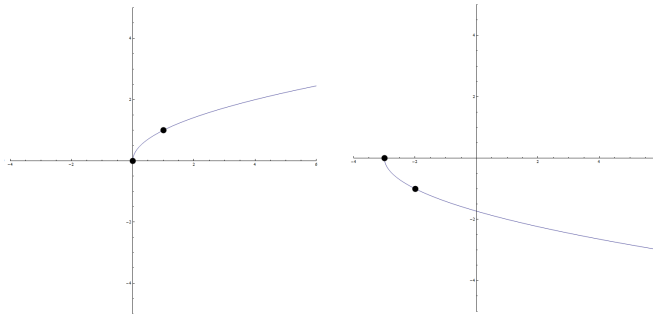
(a) $\text{Dom}(f) =$

(b) $\text{Dom}(g) =$

(c) $\text{Dom}(f \circ g) =$

(Hint: Two conditions to be checked!)

4. [2 points] The graph of $f(x) = \sqrt{x}$ is shown on the left below. The graph of $g(x)$ is shown on the right below. Please read carefully and answer precisely.



(a) Which transformations are applied on $y = f(x)$ to get to $y = g(x)$?

(b) Based on your work on Part (a), give a formula before the parentheses and the corresponding transformation (in words) in the parentheses.

$$f(x) = \sqrt{x} \longrightarrow \left(\quad \quad \right)$$

$$\longrightarrow g(x) = \left(\quad \quad \right)$$