Quiz7, MAT 1375 Professor Chiu

ID:_____ Name: Sol

- This quiz consists of 2 sets of questions, each worth 5 points, for a total of 10 points.
- You have 10 minutes to complete the quiz.
- Scientific calculators are allowed.
- Wishing you success.

Ture or False questions:

1. T Let $f(x) = 7\sqrt{x}$ and $g(x) = 5\sqrt{x}$. Then the domain of $(f + g)(x)$ is $[0, \infty)$.
2. T Let $f(x) = 3x + 6$ and $g(x) = 2x - 8$. Then the domain of $\left(\frac{f}{g}\right)(x)$ is $(-\infty, 4) \cup (4, \infty)$.
3. T Let $f(x)$ and $g(x)$ be two functions. Then $D_{f-g} = D_f \cap D_g$.
4. T The composition of the function f with function g is defined by $(f \circ g)(x) = f(g(x))$.
5. F Let $f(x)$ and $g(x)$ be two functions. Then $(f \circ g)(x) = (g \circ f)(x)$.

Show all your work and justify your answer:

6. Let $f(x) = x + 2$ and $g(x) = x^2 - 5x + 4$. Find $\frac{f}{g}$ and state its domain.

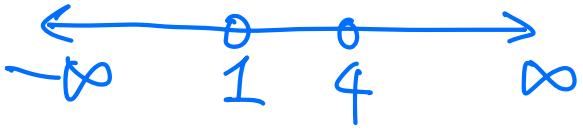
$$\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)} = \frac{x+2}{x^2-5x+4}, \quad g(x) \neq 0$$

Domain: $D_f = (-\infty, \infty)$, $D_g = (-\infty, \infty)$

$g(x) \neq 0 \Rightarrow x^2 - 5x + 4 \neq 0 \Rightarrow (x-1)(x-4) \neq 0$

$\Rightarrow x - 1 \neq 0$ and $x - 4 \neq 0$

$\Rightarrow x \neq 1$ and $x \neq 4$



$\Rightarrow (-\infty, 1) \cup (1, 4) \cup (4, \infty)$