



MA1021

Calculus I

B Term, 2014

Quiz 1

Print Name: _____

Sign: _____

Let $f(x) = x^2 + 1$, $g(x) = 1/x$, and $h(x) = 2 - x$.

Label each of the following as TRUE or FALSE

____ 1. $f(x)h(x) = 2 - x + 2x^2 + x^3$

False - it should be $f(x)h(x) = 2 - x + 2x^2 - x^3$

____ 2. $f(2) + g(2) = (f + g)(2)$.

True - with no calculations. It is the definition of the sum of two functions.

____ 3. $f(g(2)) = 2$.

False - $f(g(2)) = f(1/2) = (1/4) + 1 = 5/4$.

____ 4. $f(2x) + f(3x) = 5f(x)$.

False - $f(2x) + f(3x) = ((2x)^2 + 1) + ((3x)^2 + 1) = 4x^2 + 1 + 9x^2 = 13x^2 + 2 \neq 25x^2 + 1$.

____ 5. $|f(x)|$ defines a function.

True - this is the composite of the f and $|x|$, both functions.

____ 6. π is in the domain of $h(x)$.

True - The domain of $h(x)$ is all x , or $-\infty < x < \infty$. So π is in the domain. Or you could say $h(\pi) = 2 - \pi$ is defined.

____ 7. $(f/g)(x)$ has domain $(-\infty, \infty)$.

False. Since 0 is not in the domain of g , it is not in any function made from g via $+$, $-$, $\times$ or $/$.

____ 8. 2 is in the domain of $f(h(g(x)))$.

True - 2 is in the domain of g since $2 \neq 0$, and since f and h are defined for all reals, $f(h(g(2)))$ is defined.

____ 9. $(g/f)(x)$ has domain $(-\infty, \infty)$.

False. Since 0 is not in the domain of g , it is not in any function made from g via $+$, $-$, $\times$ or $/$.

____ 10. The graphs of $f(x)$ and $h(x)$ never intersect.

False. They intersect when $x^2 + 1 = 2 - x$. If you look at the graphs they obviously cross. Otherwise use the quadratic formula.