Quiz 1 **Name:**

1. Simplify the expression $\dfrac{16\,x^5\,y^2\sqrt{y}\,(t-y)}{24\,x^3\,y^{1/2}(t^2-y^2)}$.

2. Find the domain of the function $f(x) = \dfrac{1+x^2}{\sqrt{x^2-3x-10}}$.

3. Evaluate the difference quotient $\dfrac{f(7+h)-f(7)}{h}$ for the function $f(x) = (11-x)^2$ and simplify your answer.

4. Find the functions $f \circ g, \quad g \circ f$ and their domains if $\quad f(x) = \sin x, \quad g(x) = \sqrt{\frac{1}{2} - x}$

5. Sketch the graph of an example of a function $f(x)$ that satisfies all of the given conditions:

$\lim_{x \to -2^-} f(x) = 1, \quad \lim_{x \to -2^+} f(x) = 3, \quad f(-2) = -1,$

$\lim_{x \to 1^-} f(x) = 2, \quad \lim_{x \to 1^+} f(x) = 2, \quad f(2) = 1.$