Quiz 1 **Name:**

1. Simplify the expression $\dfrac{2 \cdot 3^5 \, x\sqrt{x}\,(a-b)^3}{18\, x^{1/2}(a^2-b^2)}$.

2. Evaluate the difference quotient $\dfrac{f(2+h)-f(2)}{h}$ for the function $f(x) = 6 - x^2$ and simplify your answer.

3. Find the domain of the function $f(x) = \dfrac{7-x}{\sqrt{x^2+3x-10}}$.

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

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

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

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