Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (4 points) Consider the following piecewise function: $g(x) = \begin{cases} 5x^2 - ax, & x \leq 2 \\ 15 + b\cos(\pi x), & x > 2 \end{cases}$

   (a) Find a so that $\lim\limits_{x \to 2^-} g(x) = 6$.

   (b) Find a and b so that $g(2) = 12$ and g is continuous at $x = 2$.

2. (4 points) Evaluate each limit.

   (a) $\lim\limits_{x \to -4^+} \dfrac{x - 2}{\sqrt{12 - x}}$

   (b) $\lim\limits_{x \to 5^-} \dfrac{x^2 - 2x - 15}{x^2 - 25}$

3. (2 points) Find and classify the discontinuities of $f(x) = \dfrac{\sin x}{x(x + 5)^2}$.