9am

Quiz 1

Spring 2012 **Your name:** _____

Math 0220 **Your TA's name:** _____

No calculators. Show all your work (no work = no credit). Write neatly.

---

1. (a) [3 points] Find the functions $f \circ g$, $g \circ f$ if

$$f(x) = \cos x, \quad g(x) = \sqrt{\frac{1}{4} - x^2}$$

(b) [1 point] Find the domain (maximal possible) of the function $f \circ g$.

(c) [1 point] Find the domain of $g \circ f$ inside the interval $[-\pi, \pi]$.

2. [5 points] Evaluate the limit, if it exists. If it does not exist explain why.

$$\lim_{x \to 0} \frac{\sin^2(2x)}{4x^2}$$

In your work mention what Rules, Laws, or Formulas you use.

3. [5 points] Find the domain and sketch the graph of the function $g(x) = \dfrac{x^2}{|x|}$.

bonus problem [5 points extra] Evaluate the limit, if it exists. If it does not exist explain why.

$$\lim_{x \to -3^-} \left(\frac{7x + 21}{2|x + 3|} - x - 3 \right).$$