NAME: Solution

Quiz 1: No calculators. Justify all answers. No partial credit is given for an answer that is both unexplained and incorrect.

1. (2pts) What is the domain of a function?
   The domain is the set of all allowed input arguments of the function.

2. (2pts) What is the range of a function?
   The range is the set of all obtainable values of the function.

3. (3pts) If we have functions, f and g, with formulas $f(x) = \arcsin(x)$ and $g(x) = \sqrt{x}$, what is the domain of the composition function $f \circ g$? (Recall that arcsin or $\sin^{-1}$ is the inverse function if sin is restricted to the domain $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$.)

   We have that $f \circ g(x) = \arcsin \sqrt{x}$. The domain of $\sqrt{}$ is $[0, \infty)$, so the domain of $f \circ g$ must be contained in $[0, \infty)$. The domain of arcsin is $[-1, 1]$, so if x is in the domain of $f \circ g$ we must have that $\sqrt{x} \leq 1$, which implies that $x \leq 1$. Together with the restriction that x must not be negative we have

   $$0 \leq x \leq 1$$

   the domain of $f \circ g$ is the closed unit interval $[0, 1]$.