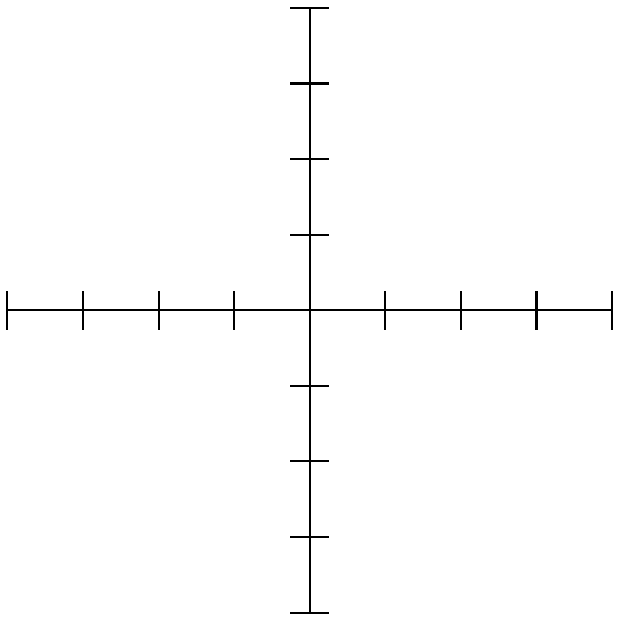
24 January 2005

Quiz 1 - Math 112, Sections 20-22

Answer question 1 on the back, and question 2 on the bottom. Place a box around your answers. **Graphing calculators are <u>not</u> allowed on this exam.**

1. Let $f(x) = x^2 - 6x + 14$.
   (a) At what value of x does f reach its minimum?
   (b) What is the minimum value of f?
   (c) What is the vertex of f?
2. Plot the following three functions on the axes given below. Label each function clearly! Each tick mark on the axes represents one unit.
   (a) $f(x) = x^2$
   (b) $g(x) = (x-2)^2$
   (c) $h(x) = (x-2)^2 + 1$



Solutions.

1. (a) f reaches its minimum when $x = \frac{-b}{2a}$, and in this case $b = -6$ and $a = 1$ so $x = 3$.

   (b) The minimum value is $f(3) = 3^2 - 6(3) + 14 = 5$.

   (c) The vertex is $(3, 5)$.

2. Graphy