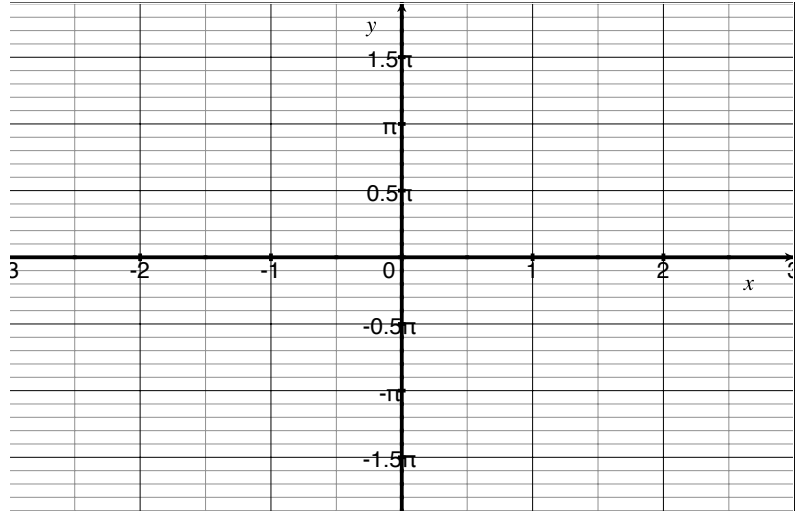# TMATH 124: Quiz 1

Show *all* your work (numerically, algebraically, or geometrically) for each and simplify. No credit is given without supporting work. No calculators or notes are allowed.

1. Let $f(x) = \begin{cases} \pi x + \frac{\pi}{2} & \text{if } x < 0 \\ 2\arctan(x) & \text{if } 0 < x \end{cases}$

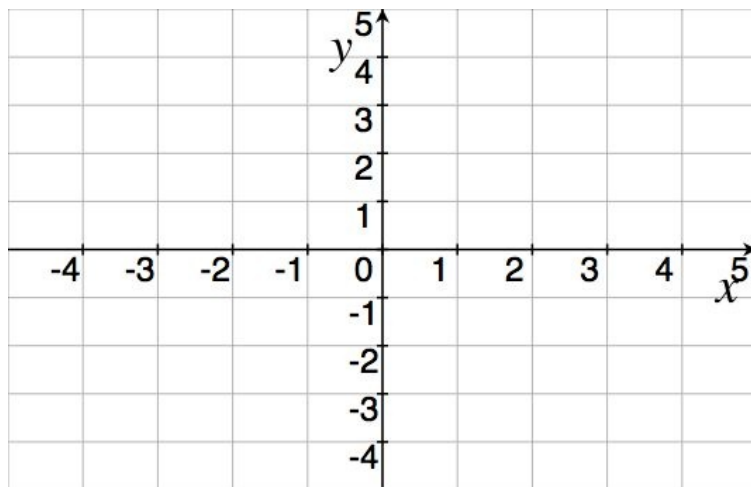   (a) [3] *Carefully* graph f on the axis provided

   (b) [1] (§2.2 #12) Determine the values of c for which $\lim\limits_{x \to c} f(x)$ exists.
   If you are having trouble with (a) explain how you would find the answer.

2. [3] (Limits Wks #3) Draw a function g such that both conditions are met:

   (a) $\lim\limits_{x \to 2} g(x) = -3$

   (b) $g(2) = 4$

3. [3] (WebHW2 #1 & §2.3 #2f) For the function h whose graph is given, estimate the value of each quantity, if it exists.

$$\lim_{x \to 1} h(x)$$

$$\lim_{x \to 3^+} h(x)$$

$$\lim_{x \to -1} \sqrt{5h(x) + 5}$$