name : _____

section : 109

GSI : Charles Wang

(2 pts) Circle True or False. (+1 for correct, 0 for blank, -1 for incorrect)

1. (True False) If the mean and median of a pdf are equal, then the pdf is symmetric.

2. (True False) There is a uniform distribution on the interval $(-\infty, \infty)$.

(10 pts) For the following, you must **justify** your answer to receive credit. (Showing your work counts as justification.)

3. Let $f(x) = \frac{5}{\pi} \frac{1}{1+25x^2}$.

   (a) Sketch a graph of $f(x)$. (2pts)

   (b) Verify that $f(x)$ is a pdf. (3pts)

   (c) Compute the median and mean of $f(x)$. *Hint:* Is $f(x)$ symmetric? (5pts)