

name : \_\_\_\_\_

section : 105

GSI : Charles Wang

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

1. (True False) Any function  $f(x)$  such that the two-sided improper integral  $\int_{-\infty}^{\infty} f(x)dx$  is convergent can be turned into a pdf by multiplying  $f(x)$  by a constant  $c$ .
2. (True False) Any function  $f(x)$  such that  $\int_{-\infty}^{\infty} f(x)dx = 1$  is a pdf.

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

3. (a) Let  $f(x) = \begin{cases} 0 & x < 1 \\ \frac{1}{x^4} & x \geq 1 \end{cases}$ . Find the constant  $c$  which makes  $cf(x)$  a pdf.

(b) Find the cdf  $F(x)$  for the pdf  $cf(x)$ , and compute the median.