Math 172 | Quiz 6 | Name: _____

14 Oct 2016 | Show Appropriate Work | Point Values in boxes.

1. [6] Find C so that $f(x) = C\left(\dfrac{x^2+x+1}{(x^2+1)^2}\right)$ is a probability density function on $[0,\infty)$.

HINT: $\dfrac{x^2+x+1}{(x^2+1)^2} = \dfrac{x^2+1}{(x^2+1)^2} + \dfrac{x}{(x^2+1)^2}$

2. [4] Use the Comparison Test to show the following converges.

$$\int_{12}^{\infty} \frac{x}{x^{57}+13}\,dx$$