Math 132
Worksheet 8 – March 20, 2012

Name _____

1. (a) Show that $\int_1^\infty 1 + \frac{1}{x^4}\,dx$ diverges.

(b) Show that $\int_{-\infty}^\infty \frac{1}{1+x^4}\,dx$ converges.

(c) Show that $\int_2^\infty \frac{1}{x^4-1}\,dx$ converges.

(d) Show that $\int_{-\infty}^\infty \frac{1}{x^4-1}\,dx$ diverges.
Hint: look at the integral near $x = 1$!

2. Which of the following converge? (Don't forget to check for vertical asymptotes!)

(a) $\displaystyle\int_{-\infty}^{\infty} \frac{1}{1+x^3}\,dx$

(b) $\displaystyle\int_{-\infty}^{\infty} \frac{1}{1+x^6}\,dx$

(c) $\displaystyle\int_{-\infty}^{\infty} \frac{1}{(1+x^3)^2}\,dx$