Worksheet 4

Name:

1. The integral $\displaystyle\int_3^\infty \frac{1}{x^4}\,dx$

(a) Converges

(b) Diverges

2. By definition, $\displaystyle\int_2^\infty \frac{1}{x^4}\,dx =$

(a) $\displaystyle\lim_{b\to\infty}\Big(-\frac{x^{-3}}{3}\Big)\Big|_0^b$

(b) $\displaystyle\lim_{b\to\infty}\Big(\frac{x^{-3}}{3}\Big)\Big|_2^b$

(c) $\displaystyle\lim_{b\to\infty}\Big(-\frac{x^{-3}}{3}\Big)\Big|_2^b$

3. The quantity $\displaystyle\lim_{t\to 1^-}\Big(\arcsin\big(x\big)\Big)\Big|_0^t$ corresponds to

(a) $\displaystyle\int_0^1 \arcsin(x)\,dx$

(b) $\displaystyle\int_0^1 \frac{1}{\sqrt{1-x^2}}\,dx$

(c) $\displaystyle\int_0^1 \frac{1}{x^2-1}\,dx$

4. Show that $\displaystyle\int_{-2}^2 \frac{1}{\sqrt{4-x^2}}\,dx = \frac{\pi}{2}$