Math 1450, Honor Calculus Practice15, Fall 2016.

November 8, 2016

PSID: _____   Name: _____

Use the properties of integrals to verify the following inequalities.

1. $\displaystyle\int_0^{\frac{\pi}{2}} x\sin(x)\,dx \le \frac{\pi}{8}.$

2. $\displaystyle\frac{\sqrt{2}\pi}{24} \le \int_{\frac{\pi}{6}}^{\frac{\pi}{4}} \cos(x)\,dx \le \frac{\sqrt{3}\pi}{24}.$

3. $\displaystyle\int_1^3 \sqrt{x^4+1}\,dx \ge \frac{26}{3}.$

4. $2 \leq \displaystyle\int_{-1}^{1} \sqrt{1 + x^2}\, dx \leq 2\sqrt{2}.$

5. $\displaystyle\int_{10}^{15} \frac{t^3}{t^6 + t^2 - 1}\, dt \leq \frac{3}{1000}.$

6. $\dfrac{3}{4} \leq \displaystyle\int_{0}^{1} \frac{1}{1 + t^4}\, dt \leq \frac{9}{10}.$