NAME: _____   **Panther ID:** _____

Homework – due Thursday, Feb 25   - MAC 2312, Spring 2016

1. Suppose that a is a given positive number.

(a) Find the area of the region bounded between the curve $y = x^2$ and the x-axis on the interval $[-a, a]$.

(b) Find the area of the region bounded between the curve $y = x^2$ and the line $y = a^2$.

(c) Show that the ratio of the areas you computed in parts (a) and (b) is a constant that does not depend on the chosen number a.

Note: This result can be further generalized and will have a significance later in the course.

2. The region bounded between $y = 1/x^2$, $y = 0$, $x = 1$ and $x = 2$ is rotated around the x-axis. Set up an integral that gives the volume of the solid obtained. You are not required to evaluate the integral, but you should sketch the solid.

3. The region bounded between $y = 1/x^2$, $y = 0$, $x = 1$ and $x = 2$ is rotated now around the line $x = 3$. Set up an integral that gives the volume of the solid obtained. You are not required to evaluate the integral, but you should sketch the solid.