

## Practice Exam 2

February 14, 2009

- 1** Find the area of the region bounded by the following:  $y = \frac{1}{x}$ ,  $y = x^2$ ,  $y = 0$  and  $x = e$ .
- 2** Find the volume of the solid obtained by rotating the region between  $x = 1 + y^2$  and  $y = x - 3$  about the  $y$ -axis.
- 3** Find the volume of the solid obtained by rotating the region between  $y = \sin 2x$  when  $x$  is in the interval  $[0, \pi]$  about the  $y$ -axis.
- 4** Find the volume of the solid obtained by rotating the region between  $y = x^2$  and  $y = x$  about the line  $y = 2$ .
- 5** The height of a monument is 20m. A horizontal cross-section at a distance  $x$  meters from the top is an equilateral triangle with side  $\frac{1}{4}x$  meters. Find the volume of the monument.
- 6** Find the average value of the function  $f(t) = t \sin(t^2)$  on the interval  $[0, 10]$  and find the number  $c$  such that  $f(c)$  equals the average.
- 7** Find the volume of the solid obtained by rotating the region bounded by  $y = \ln x$ ,  $y = 0$ ,  $x = 2$  about the  $x$ -axis.
- 8** In the spirit of Valentine's Day, who is the love of Buffy's life? (Choose among the five Buffy lovers)

*Angel , Parker , Riley , Spike , Satsu*