

King Fahd University of Petroleum and Minerals  
Math Dept  
Test 2 Math 102-2  
Sum 2001

1. Use the shell method to set up the integral to find the volume generated if the region bounded by the graphs  $y = 4 - x^2$ , and  $y = 0$ , revolves about the line  $x = 3$ .
2. Find the surface area if the parametric curve  $x = 2 \cos t$ ,  $y = 2 \sin t$ ,  $0 \leq t \leq \pi$  is revolving about the  $x$  axis.
3.  $\int \operatorname{sech} x dx$
4.  $\int_0^{\frac{2}{4}} \sin \sqrt{x} dx$
5.  $\int \cos x \sin x \sqrt{1 - \sin^4 x} dx$
6.  $\int \frac{x^2 - x + 1}{x(x-1)^2} dx$
7.  $\int_0^{\frac{\pi}{6}} \frac{\cos x}{\sqrt{1 - 2 \sin x}} dx$
8. Find the area between the curve  $y = \frac{1}{x^2 + 1}$  and the  $x$  axis,  $x \geq 0$  is revolving about the  $x$  axis.
9. Determine if the sequence  $1 - \frac{2}{\sqrt{n}}$  diverges or converges, if so find its limit.
10.  $\int \sin^{21} x \cos^3 x dx$