King Fahd University of Petroleum and Minerals
Quiz 2 Math 102-111 Duration 25 minutes

Full Name: ID:
Section:

Question 1 Use cylindrical shells to set up the integral for finding the volume of the solid obtained by rotating about the line $x = -1$ the region (in the first and fourth quadrants) bounded by $y = 3 - x^2$, $2y + x = 0$ and $x = 0$:
(Do not evaluate the integral)

Question 2 Evaluate the following integrals:

a) $\int \left(\frac{x^2}{3x^2-\sqrt{24}\,x+3}\right)^{\frac{3}{2}}\, dx$

b) $\int \sin^3(2x)\cos^2(x)\,dx$.

c) $\int x\ln(x+1)^2\,dx$

Question 3 Find the average value of the function $f(x) = \tan^3 x \sec^{\frac{3}{2}} x$ on the interval $[0, \frac{\pi}{3}]$.