MATH 230 NAME:
7.3

Directions: Show all work on a separate sheet of paper for full credit.

1. $\displaystyle\int \frac{x^2}{\sqrt{9-x^2}}\,dx$ $\qquad \frac{9}{2}\sin^{-1}\left(\frac{x}{3}\right) - \frac{1}{2}x\sqrt{9-x^2} + C$

2. $\displaystyle\int \frac{\sqrt{x^2-1}}{x^4}\,dx$ $\qquad \frac{(x^2-1)^{3/2}}{3x^3} + C$

3. $\displaystyle\int_0^3 \frac{x}{\sqrt{36-x^2}}\,dx$ $\qquad 6 - 3\sqrt{3}$

4. $\displaystyle\int_2^3 \frac{1}{(x^2-1)^{3/2}}\,dx$ $\qquad -\frac{3}{\sqrt{8}} + \frac{2}{\sqrt{3}}$

5. $\displaystyle\int \sqrt{4-9x^2}\,dx$ $\qquad$ Let $x = \frac{2}{3}\sin\theta$, Answer: $\frac{2}{3}\sin^{-1}\left(\frac{3x}{2}\right) + \frac{x\sqrt{4-9x^2}}{2} + C$

6. $\displaystyle\int_0^{1/2} x\sqrt{1-4x^2}\,dx$ $\qquad$ Standard u-sub. Answer: $\frac{1}{12}$

7. $\displaystyle\int \frac{\sqrt{1+x^2}}{x}\,dx$ $\qquad \ln\left|\frac{\sqrt{1+x^2}}{x} - \frac{1}{x}\right| + \frac{\sqrt{1+x^2}}{1} + C$