Quiz #4 Key Math 1071 April 28, 2014

Name: _____ Section: _____

You have 12 minutes to complete the quiz. Please **show all work**, and then **circle your answer.**

1. Compute the integral

$$\int \frac{x^2+1}{x}\,dx$$

$$= \int \frac{x^2}{x} + \frac{1}{x}\,dx$$

$$= \int x + \frac{1}{x}\,dx$$

$$= \frac{x^2}{2} + \ln|x| + C$$

2. Compute the integral

$$\int \frac{x}{\underbrace{1-x^2}_{u}}\,dx$$

$u = 1 - x^2$

$\frac{du}{dx} = -2x$

$\frac{du}{-2x} = dx$

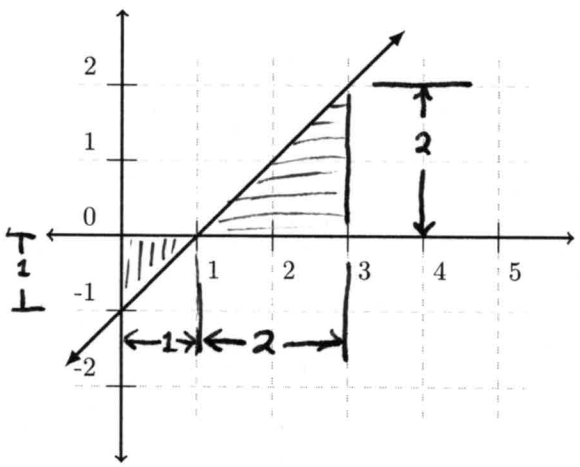
$$= \int \frac{x}{u} \cdot \frac{du}{-2x}$$

$$= \int \frac{-1}{2} \cdot \frac{1}{u}\,du$$

$$= \frac{-1}{2} \cdot \ln|u| + C$$

$$= \frac{-1}{2} \cdot \ln|1-x^2| + C$$

3. Let $f(x)$ be defined using the graph below. Compute the integral $\int_0^3 f(x)\,dx$



$$\int_0^3 f(x)\,dx = (\text{area above}) - (\text{area below})$$

$$= \frac{1}{2} \cdot 2 \cdot 2 - \frac{1}{2} \cdot 1 \cdot 1$$

$$= 2 - \frac{1}{2}$$

$$= 1.5$$