Math 172 | Quiz 1 | Name: _____

20 Jan 2017 | Show Appropriate Work | Point Values in boxes.

Integrate.

1. [4] $\int \frac{dx}{\sqrt{9-x^2}}$

$= \frac{1}{3}\int \frac{dx}{\sqrt{1-(\frac{x}{3})^2}} = \int \frac{du}{\sqrt{1-u^2}} = \arcsin u + C$

$= \arcsin\left(\frac{x}{3}\right) + C$

$u = \frac{x}{3}$

$du = \frac{1}{3}dx$

2. [6] $\int_0^1 \frac{1+x}{1+x^2}\,dx$

$= \int_0^1 \frac{1}{1+x^2}\,dx + \frac{1}{2}\int_0^1 \frac{2x\,dx}{1+x^2}$

$= \arctan x \Big|_0^1 + \frac{1}{2}\ln(1+x^2)\Big|_0^1$

$= \frac{\pi}{4} + \frac{1}{2}\ln 2$