Math 166: Honors Calculus II   Name:_____

Quiz 4 *Feb. 11, 1999*

1. Define the function $\arctan(x)$, including its domain and range, and prove that $\dfrac{d}{dx}\arctan(x) = \dfrac{1}{x^2+1}$.

2. Integrate $\displaystyle\int \dfrac{x}{\sqrt{3-2x-x^2}}\,dx$.

3. Give the general form of the partial fraction decomposition of

$$\frac{x^6 + x^4 + x^2 + 1}{(x-1)(x^2+3)^2(x+5)^3}$$

(Do not solve for the constants).

4. Integrate $\displaystyle\int \frac{x^3 + 1}{x(x^2+4)}\, dx$