Math 125 **Proficiency Quiz** (20 minutes) Tuesday, January 14, 2003

Name _____ **Student number** _____ **Quiz section:** _____

1 : Find the general antiderivative of $f(x) = x^3 - 1 + \dfrac{2}{1+x^2} - e^{2x}$.

2 : Find all functions $f(x)$ such that $f'(x) = \sqrt{x} - x$ and $f(1) = 1$.

3 : a) Write down a Riemann sum with $n = 4$ for $\int_{-2}^{2} \left(1 + \sqrt{4 - x^2}\right)\, dx$. Do not simplify (in particular, do not use decimals for expressions like $\sqrt{2}$).

b) Find $\int_{-2}^{2} \left(1 + \sqrt{4 - x^2}\right)\, dx$ by interpreting it as an area.