Worksheet 1

**Name:**

**Major:**

**1.** Use substitution to compute $\int \frac{1+e^x}{\sqrt{x+e^x}}\,dx$ (Hint: Let $u = x + e^x$)

**2.** Remember that the average value of a function $f(x)$ on an interval $a \leq x \leq b$ is given by the formula

$$\frac{1}{b-a}\int_a^b f(x)\,dx.$$

Use this formula to find the average value of the function $f(x) = \frac{x}{x^2+1}$ on the interval from $x = 1$ to $x = 4$ (Hint: After you set up the integral, let $u = x^2 + 1$).