FIND THE ERROR!

1. $1 + \cos x = 1 + (1 - \sin^2 x)^{\frac{1}{2}}$

   $(1 + \cos x)^2 = \{1 + (1 - \sin^2 x)^{\frac{1}{2}}\}^2$

   Let $x = \pi$

   $(1-1)^2 = \{1 + (1-0)^{\frac{1}{2}}\}^2$

   So $\quad 0 = (1+1)^2 = 4.$

2. $1 = \sqrt{1}$

   $\quad = \sqrt{(-1)(-1)}$

   $\quad = \sqrt{-1} . \sqrt{-1}$

   $\quad = i . i$

   $\quad = -1.$

3. $I = \int \frac{dx}{x} = \int 1.(\frac{1}{x}) \, dx$

   $\quad\quad = x.\frac{1}{x} - \int x \, (\frac{-1}{x^2}) \, dx \; \ldots \; \text{integration by parts}$

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

   $\quad\quad = 1 + I$

   Therefore $0 = 1.$

4. $(a + b)^n = a^n + na^{n-1}b + \ldots + b^n$

   Put $n = 0$

   $1 = 1 + 0 + \ldots + 0 + 1$

   $\quad = 2.$

   Write in and tell us of the errors; we'll publish the best answers. If you know of any other such "proofs" send in — Ed.