Test 1 errors

Disprove the following:

- $$\sqrt{x^2 + 1} = x + 1$$

- $$\frac{3 + 5^n}{2 + 4^n} = \frac{3}{2} + \frac{5^n}{4^n}$$

- $$\frac{d}{dx} 5^x = x 5^x$$

- $$x^2 (x^3 - 1)^{-\frac{1}{2}} = (x^5 - x^2)^{-\frac{1}{2}}$$

- Given $f(x) > 0$, $a < b$:

$$\int_a^b f(x)dx < 0$$