



The Equation $1 = 2$

$$a = b$$

$$a^2 = ab$$

$$a^2 - b^2 = ab - b^2$$

$$(a - b)(a + b) = b(a - b)$$

$$\cancel{(a - b)}(a + b) = b\cancel{(a - b)}$$

$$(a + b) = b$$

$$\text{but } a = b$$

therefore :

$$a + a = a$$

$$2a = a$$

hence

$$2 = 1$$

However, this results in dividing by 0, because $a - b = a - a = 0$

EDIT:

Your mistake comes in step 5, when you divided by $(x-y)$ on both sides. Since $x = y$, $x-y = 0$, so you are dividing by zero, which is undefined (illegal!).

Source: <http://mathforum.org/library/drmath/view/55792.html>

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