Solve the equation $\log_2(x-3) = 1 - \log_2(x-4)$

$$\log_2(x-3) = 1 - \log_2(x-4)$$
$$\log_2(x-3) + \log_2(x-4) = 1$$

$\log a + \log b = \log a\, b$

$$\log_2(x-3)(x-4) = 1$$

$a^x = b \iff x = \log_a b$

$$(x-3)(x-4) = 2^1$$
$$x^2 - 7x + 12 = 2$$
$$x^2 - 7x + 10 = 0$$
$$(x-2)(x-5) = 0$$
$$x = 2\,, x = 5$$