Problem 14

Solve for x:

$\sqrt{x\sqrt[3]{x}} - 2\sqrt[3]{x\sqrt{x}} = 0,\ x \neq 0$

Answer

$\boxed{64}$

Explanation

$\sqrt{x^{4/3}} - 2\sqrt[3]{x^{3/2}} = 0$

$x^{2/3} - 2x^{1/2} = 0$

$x^{1/2}\left(x^{1/6} - 2\right) = 0$

$x^{1/2} = 0$	$x^{1/6} - 2 = 0$
	$x^{1/6} = 2$
	$x = 2^6$
$x = 0$	$x = 64$

$\Rightarrow x = 64$