

The solution of the equation

$$7^{x+7} = 8^x$$

can be expressed in the form  $x = \log_b 7^7$

What is  $b$ ?

We have

$$7^{x+7} = 8^x$$

$$\Rightarrow 7^x \cdot 7^7 = 8^x$$

$$\Rightarrow 7^7 = \frac{8^x}{7^x} = \left(\frac{8}{7}\right)^x$$

$$\Rightarrow x = \log_{\frac{8}{7}} (7^7)$$

$$\therefore b = \left(\frac{8}{7}\right)$$