The greatest common divisor for the numerator and the denominator is 3.

$$\therefore x = \frac{-6}{9} = \frac{(-6) \div 3}{9 \div 3} = \frac{-2}{3}$$

Q12

Answer :

Let the number be x.

$$\therefore \left(\frac{-2}{3}\right)^{-3} \div x = \left(\frac{4}{27}\right)^{-2}$$

$$\Rightarrow \left(\frac{3}{-2}\right)^{3} \div x = \left(\frac{27}{4}\right)^{2}$$

$$\Rightarrow \left(\frac{-3}{2}\right)^{3} \div x = \left(\frac{27}{4}\right)^{2}$$

$$\Rightarrow \left(\frac{-3}{2}\right)^{3} \times \frac{1}{x} = \left(\frac{27}{4}\right)^{2}$$

$$\Rightarrow \frac{-3^3}{2^3} \times \frac{1}{x} = \frac{27^2}{4^2}$$

$$\Rightarrow \frac{-27}{8} \times \frac{1}{x} = \frac{27^2}{4^2} = \frac{27\times27}{4\times4} = \frac{27\times27}{4\times2\times2} = \frac{27\times27}{8\times2}$$

$$\therefore \frac{1}{x} = \left(\frac{27\times27}{8\times2}\right) \Big/ \left(\frac{-27}{8}\right)$$

$$\Rightarrow x = \frac{\left(\frac{-27}{8}\right)}{\left(\frac{27\times27}{8\times2}\right)} = \left(\frac{-27}{8}\right) \times \left(\frac{8\times2}{27\times27}\right) = \frac{-2}{27}$$

Q13

Answer :

Given:

$5^{2x+1} \div 25 = 125$

We know :

$25 = 5 \times 5 = 5^2$

$125 = 5 \times 5 \times 5 = 5^3$

$\therefore \frac{5^{2x+1}}{5^2} = 5^3 \Rightarrow 5^{[(2x+1)-2]} = 5^3$

or $5^{[(2x+1)-2]} = 5^{[2x-1]} = 5^3$

$\Rightarrow 2x - 1 = 3$

$2x = 3 + 1 = 4$

$x = \frac{4}{2} = 2$

$\therefore x = 2$

$$\Rightarrow \frac{-27}{8} \times \frac{1}{x} = \frac{27^2}{4^2} = \frac{27\times27}{4\times4} = \frac{27\times27}{4\times2\times2} = \frac{27\times27}{8\times2}$$

$$\therefore \frac{1}{x} = \left(\frac{27\times27}{8\times2}\right) \Big/ \left(\frac{-27}{8}\right)$$

$$\Rightarrow x = \frac{\left(\frac{-27}{8}\right)}{\left(\frac{27\times27}{8\times2}\right)} = \left(\frac{-27}{8}\right) \times \left(\frac{8\times2}{27\times27}\right) = \frac{-2}{27}$$

Q13

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********** END **********