

Exercise 278

For the following exercises, solve the exponential equation exactly.

$$8^x = 4$$

Solution

Recognize that $8 = 2 \times 2 \times 2$ and $4 = 2 \times 2$.

$$(2^3)^x = 2^2$$

Write the exponents on the left as one.

$$2^{3x} = 2^2$$

Since the bases are equal, the exponents must be equal.

$$3x = 2$$

Solve for x .

$$x = \frac{2}{3}$$