

1. Find x when

$$(i) 2^x = 4^{2x+1}$$

$$(ii) 3^{2x} \cdot 3^{x+3} \cdot 3^{4-x} = 3^{11}$$

2. Find x if

$$(i) \left(-\frac{1}{2}\right)^{-19} \div \left(-\frac{1}{2}\right)^8 = \left(-\frac{1}{2}\right)^{-2x+1}$$

$$(ii) \left(\frac{7}{5}\right)^{2x+1} \times \left(\frac{7}{5}\right)^5 = \left(\frac{7}{5}\right)^{x+2}$$

3. Find x if $(3^2)^5 = (3)^{2x+1}$

4. Find the value of x if

$$x^3 = \left(\frac{6}{7}\right)^{-3} \times \left(\frac{6}{7}\right)^9$$

5. Express to negative exponent

$$(i) \left(\frac{11}{3}\right)^7 \quad (ii) \left(\frac{-5}{41}\right)^6$$

6. Simplify

$$(i) \left(\frac{3}{8}\right)^6 \times \left(\frac{3}{8}\right)^9 \times \left(\frac{3}{8}\right)^{-10}$$

$$(i) (90)^5 \quad (ii) \left(\frac{7}{8}\right)^{-3} \div \left(\frac{4}{7}\right)^3$$

$$(iv) \left[\left(\frac{2}{3}\right)^3\right]^{-2}$$

$$7. \text{ solve for } x : \left(\frac{2}{5}\right)^4 \times \left(\frac{2}{5}\right)^{-7} = \left(\frac{2}{5}\right)^{2x+1}$$