

Ex 1a) Simplify: $\frac{6^{\sqrt{2}}}{6^{-\sqrt{2}}}$

$6^{\sqrt{2} + \sqrt{2}}$

$6^{2\sqrt{2}}$

$(6^2)^{\sqrt{2}}$

$36^{\sqrt{2}}$

$$\text{EX 1b)} 4^\pi \cdot 2^{3-2\pi}$$

$$(2^2)^\pi \cdot 2^{3-2\pi}$$

$$2^{2\pi} \cdot 2^{3-2\pi}$$

$$2^{2\pi + 3 - 2\pi}$$

$$2^3 \rightarrow \textcircled{8}$$

$$\text{EX 1c)} (3^{2\sqrt{2}})^{\sqrt{2}}$$

$$3^{2 \cdot 2} \rightarrow 3^4 \rightarrow \textcircled{81}$$

EX 2a) Solve: $8^x = \frac{1}{4}$

$$(2^3)^x = \frac{1}{2^2}$$

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

$$3x = -2$$

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

Ex 2b) Solve: $5^{4-t} = 25^{t-1}$

$$5^{4-t} = (5^2)^{t-1}$$

$$5^{4-t} = 5^{2t-2}$$

$$4-t = 2t-2$$

$$4 = 3t-2$$

$$6 = 3t$$

$$t = 2$$