6-2d Solving Equations Containing Exponents

$$3^x = 3^2$$

$$\boxed{x = 2}$$

* When the base is the same, you set the exponents equal to eachother and solve.

EXAMPLES

① $a^{\frac{1}{2}} = a^{\frac{x}{4}}$

$4 \cdot \frac{1}{2} = \frac{x}{4} \cdot 4$

$\boxed{2 = x}$

② $5^{x+4} = 5^3$

$x + 4 = 3$

$-4 \quad -4$

$\boxed{x = -1}$

③ $6^{x+5} = 36$

$6^{x+5} = 6^2$

$x + 5 = 2$

$\boxed{x = -3}$

④ $10^{4n+2} = 1000$

$10^{4n+2} = 10^3$

$4n + 2 = 3$

$-2 \quad -2$

$4n = 1$

$\boxed{n = \frac{1}{4}}$

1000 / 10 / 100 / 10 · 10

⑤ $4^{-3x} = 64$

$4^{-3x} = 4^3$

64 / 4 16 / 4 · 4

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

$\boxed{x = -1}$