Exponential Equations

Strategy – Using the theorem; $b^x = b^y$ iff x = y

Make the bases the same, then set the exponents equal and solve the resulting equations.

Example:	$9^{x} = 81^{x-1}$
	$(3^2)^x = (3^4)^{x-1}$
	$3^{2x} = 3^{4x-4}$
	$\therefore 2x = 4x - 4$, so $x = 2$

Solve each equation.

$$\begin{array}{ccc} A & B \\ 1. & 2^{x} = 4 & 3^{x} = 27 \end{array}$$

- 2. $4^x = 64$ $2^x = 32$
- 3. $7^x = 1$ $5^x = 0$
- 4. $4(2^x) = 32$ $2(3^x) = 162$
- 5. $2(5^x) + 2 = 52$ $5^x 3 = 22$
- 6. $4(2^x) 6 = 58$ $2^x = \frac{1}{2}$
- 7. $4^x = 1/16$ $3^x = 1/81$

Hanlonmath.com