3 WAYS TO SOLVE....
EXPONENTIAL EQUATIONS!
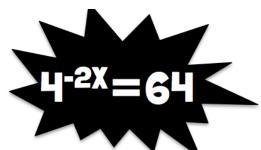
$$4^{-2x} = 64$$

1 | Same Base (one-to-one)

Steps	Example
1) Rewrite each base so they are the same.	
2) Equal the powers to each other.	
3) Solve for x.	

2 | Using Logarithms (inverse operation)

Steps	Example
1) Apply the inverse to each side by taking the logarithm.	
2) Use the Power Rule (Logarithmic Properties).	
3) Solve for x.	

3 | Converting to a Logarithmic Equation

Steps	Example
1) Rewrite the equation so it is in Logarithmic form.	
2) Solve for x.	

3 WAYS TO SOLVE....
EXPONENTIAL EQUATIONS!

$$4^{-2x}=64$$

① Same Base (one-to-one)

Steps	Example
1) Rewrite each base so they are the same.	$2^{2(-2x)} = 2^6$
2) Equal the powers to each other.	$\dfrac{-4x}{-4} = \dfrac{6}{-4}$
3) Solve for x.	$x = -\dfrac{3}{2}$

② Using Logarithms (inverse operation)

Steps	Example
1) Apply the inverse to each side by taking the logarithm.	$\log 4^{-2x} = \log 64$
2) Use the Power Rule (Logarithmic Properties).	$\dfrac{-2x \log 4}{-2\log 4} = \dfrac{\log 64}{-2\log 4}$
3) Solve for x.	$x = \dfrac{\log 64}{-2\log 4} = -\dfrac{3}{2}$

③ Converting to a Logarithmic Equation

Steps	Example
1) Rewrite the equation so it is in Logarithmic form.	$\dfrac{\log_4 64}{-2} = \dfrac{-2x}{-2}$
2) Solve for x.	$x = \dfrac{\log_4 64}{-2} = -\dfrac{3}{2}$