

Fill out the table using exponent rules.

	$x = -6$	$x = -5$	$x = -4$	$x = -3$	$x = -2$	$x = -1$	$x = 0$	$x = 1$	$x = 2$	$x = 3$	$x = 4$	$x = 5$	$x = 6$
2^x	$\frac{1}{64}$	$\frac{1}{32}$	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	8	16	32	64
3^x			$\frac{1}{81}$	$\frac{1}{27}$	$\frac{1}{9}$	$\frac{1}{3}$	1	3	9	27	81		
4^x			$\frac{1}{256}$	$\frac{1}{64}$	$\frac{1}{16}$	$\frac{1}{4}$	1	4	16	64	256		
5^x				$\frac{1}{125}$	$\frac{1}{25}$	$\frac{1}{5}$	1	5	25	125			
6^x					$\frac{1}{36}$	$\frac{1}{6}$	1	6	36				

Solving Exponential Equations Notes

Name _____ Class Period _____

To solve:

1. Make like bases
2. Set exponents equal to each other
3. Solve for the variable (x)

Examples

Solve for x.

1. $2^x = 32$

$$\cancel{2}^x = \cancel{2}^5$$

$$\boxed{x=5}$$

2. $5^x + 4 = 29$

$$\begin{array}{r} -4 \quad -4 \\ \hline \end{array}$$

$$5^x = 25$$

$$\cancel{5}^x = \cancel{5}^2$$

$$\boxed{x=2}$$

3. $6^x = \frac{1}{36}$

$$\cancel{6}^x = \cancel{6}^{-2}$$

$$\boxed{x=-2}$$

4. $8^x = 1$

$$\cancel{8}^x = \cancel{8}^0$$

$$\boxed{x=0}$$

5. $4^x + \frac{1}{16} = \frac{2}{16} - \frac{1}{16}$

$$\begin{array}{r} -\frac{1}{16} \\ \hline \end{array}$$

$$4^x = \frac{1}{16}$$

$$\cancel{4}^x = \cancel{4}^{-2}$$

$$\boxed{x=-2}$$

6. $4^{3x-1} = 4^{5x-7}$

$$3x-1 = \cancel{4}^{5x-7}$$

$$\begin{array}{r} -5x \quad -5x \\ \hline \end{array}$$

$$-2x+1 = -7$$

$$\begin{array}{r} +1 \quad +1 \\ \hline \end{array}$$

$$\begin{array}{r} -\cancel{2}x = -\cancel{6} \\ \hline -2 \quad -2 \end{array}$$

$$\boxed{x=3}$$