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	$1/64$	$1/32$	$1/16$	$1/8$	$1/4$	$1/2$	1	2	4	8	16	32	64
3^x	$1/729$	$1/243$	$1/81$	$1/27$	$1/9$	$1/3$	1	3	9	27	81	243	729
4^x	$1/4096$	$1/1024$	$1/256$	$1/64$	$1/16$	$1/4$	1	4	16	64	256	1024	4096
5^x	$1/15625$	$1/3125$	$1/625$	$1/125$	$1/25$	$1/5$	1	5	25	125	625	3125	15625
6^x	$1/46656$	$1/7776$	$1/1296$	$1/216$	$1/36$	$1/6$	1	6	36	216	1296	7776	46656

Solving Exponential Equations & Inequalities NOTES

Solving Exponential Equations

Step 1 – Isolate the base

Step 2 – Write both sides of the equation as exponential expressions with LIKE bases

Step 3 – Set the EXPONENTS equal to each other (or use the same inequality)

Step 4 – Solve for the unknown

Examples

Solve for x.

1. $2^x = 32$

$2^x = 2^5$

$x = 5$

2. $5^x + 4 = 29$

$-4 \quad -4$

$5^x = 25$

$5^x = 5^2$

$x = 2$

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

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

$x = -2$

4. $8^x = 1$

$8^x = 8^0$

$x = 0$

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

$-\frac{1}{16}$

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

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

$x = -2$

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

$3x - 1 = 5x - 7$

$+1 \quad +1$

$3x = 5x - 6$

$-5x \quad -5x$

$-2x = -6$

$\frac{-2x}{-2} = \frac{-6}{-2}$

$x = 3$

7. $3^x \leq 27^{x-4}$

$3^x \leq 3^{3(x-4)}$

$x \leq 3(x-4)$

$x \leq 3x - 12$

$-3x \quad -3x$

$-2x \leq -12$

$\frac{-2x}{-2} \leq \frac{-12}{-2}$

$x \geq 6$

8. $2^{7x-6} > 2^{5x+2}$

$7x - 6 > 5x + 2$

$+6 \quad +6$

$7x > 5x + 8$

$2x > 8$

$x > 4$