

Practice Assignment

Solve the equation (hint: use your table of exponents).

1.  $3^{12} > 9^{2x}$

$$3^{12} > 3^{2(2x)}$$

$$\frac{12}{4} > \frac{4x}{4}$$

$$3 > x$$

\* 2.  $16^{-1} < 64^{-x-2}$

$$4^{2(-1)} < 4^{3(-x-2)}$$

$$-2 < -3x - 6$$

$$+6$$

$$\frac{4 < -3x}{-3} \quad \boxed{\frac{-4}{3} > x}$$

3.  $4^{2x-2} > 2^{x+1}$

$$2^{2(2x-2)} > 2^{x+1}$$

$$\frac{4x-4}{-x} > \frac{x+1}{+1}$$

$$3x > \frac{5}{3}$$

$$x > \frac{5}{9}$$

4.  $9^{-x+5} > 27^{6x-10}$

$$3^{2(-x+5)} > 3^{3(6x-10)}$$

$$\frac{-2x+10}{+30} > \frac{18x-30}{+2x}$$

$$\frac{40}{20} > \frac{20x}{20}$$

$$2 > x$$

5.  $4^{x-5} \leq 16^{2x-31}$

$$4^{x-5} \leq 4^{2(2x-31)}$$

$$x-5 \leq 4x-62$$

$$+62 \quad -x$$

$$\frac{57 \leq 3x}{3} \quad \frac{3}{3}$$

$$19 \leq x$$

6.  $32^{3x-4} > 128^{4x+3}$

$$2^5(3x-4) > 2^7(4x+3)$$

$$\frac{15x-20}{-21} > \frac{28x+21}{-15x}$$

$$\frac{-41}{13} > \frac{13x}{13}$$

$$3.2 > x$$

7.  $3^{x-4} < \frac{1}{27}$

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

$$\frac{x-4}{+4} < \frac{-3}{+4}$$

$$x < 1$$

8.  $\left(\frac{1}{27}\right)^{3x+13} \leq 9^{5x-\frac{1}{2}}$

$$3^{-3(x+13)} \leq 3^{2(5x-\frac{1}{2})}$$

$$-9$$

$$\frac{-3x-39 \leq 10x-1}{+1 \quad +3x}$$

$$\frac{-38 \leq 13x}{13 \quad 13}$$

$$-2.9 < x$$

9.  $27^{x-2} \leq 81^{x+7}$

$$3^{3(x-2)} \leq 3^{4(x+7)}$$

$$\frac{3x-6 \leq 4x+28}{-4x \quad +4}$$

$$\frac{-1x \leq 34}{-1 \quad -1}$$

$$\boxed{x \geq -34}$$