8.6 Solving Logarithmic Equations

"I can solve and check any equation with logarithmic expressions. I also know what the restrictions are in an equation."

Recall: Given: $y = \log_b x$.

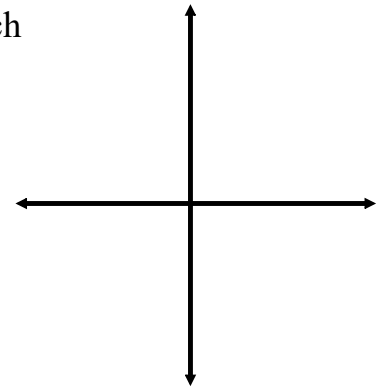
(Refer to p.450)

$D: \{x \in R \mid x > 0\}$

$R: \{y \in R\}$

$b > 0,\ b \neq 1$

Sketch



Since the domain of $y = \log_b x$ is $D: \{x \in R \mid x > 0\}$, when solving equations involving logarithms, one must always identify the restrictions on x.
It is best to do this **as soon as possible**.

For example, if one is asked to solve $\log_5(2x - 5) = \log_5 7$, then whatever the final solution is for x, it must be greater than $\frac{5}{2}$.

Ex. 1: Solve: $\log_5(2x - 5) = \log_5 7$

Ex. 2: Solve:

a) $\log_3(x - 4) + \log_3 5 = \log_3 10$

b) $\log_2(x - 3) + \log_2(x + 4) = 3$

pp. 491–492 #1de, 2de, 4de, 5cef, 7bdef, 9, 12, 13, 14, 20

Also **READ** pp. 494–499