


7.4 Solving Logarithmic Equations and Inequalities  
Honors Algebra 2

1. Solve the following equations:

a.  $\log_{36} x = \frac{3}{2}$

b.  $\log_9 x = \frac{3}{2}$

c.  $\log_{16} x = \frac{5}{2}$

 **Key Concept** Property of Equality for Logarithmic Functions

**Symbols** If  $b$  is a positive number other than 1, then  $\log_b x = \log_b y$  if and only if  $x = y$ .

**Example** If  $\log_5 x = \log_5 8$ , then  $x = 8$ . If  $x = 8$ , then  $\log_5 x = \log_5 8$ .

2. Solve the following and check solutions.

a.  $\log_2 (x^2 - 4) = \log_2 3x$

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b.  $\log_3 (x^2 - 5) = \log_3 2x$

c.  $\ln(x^2 - 1) = \ln 3$