

Lesson 3.8 - Solving Logarithmic Equations

I. Warm-Up: Condense the logarithmic expressions:

1. $4 \log_9(x) - \left(\log_{\sqrt{3}}(y) + \log_{\frac{1}{3}}(z) \right)$

II. Solving Log Equations

2. $\log_2(x) + \log_2(x + 2) = \log_2(x + 6)$

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

4. $\log_3(x) - \log_{\frac{1}{3}}(x - 9) = 2(\log_3(2) + 1)$

III. Harder Log Problems!

5. $\ln(x) + \ln(x + 3) = 1$

6. $\ln(\sqrt{x-8}) = 5$

7. $\log_4(x) + \log_4(x - 3) = 1$

8. $\log\left[\log\left(\frac{x}{8}\right)\right] = 0$

9. $2\log_3(x) = 2\log_3(2) + \log_3(3 - x)$

10. $\log_{36}(x) + \frac{1}{4}\log_{\sqrt{6}}(x - 5) = 1$