

3.5 Solving Logarithmic Equations Worksheet

This document was composed and formatted by Annie Bernatchez.

The course material originated from www.jensenmath.ca

1) Find the roots of each equation

a) $2 = \log(x + 25)$

b) $1 - \log(w - 7) = 0$

c) $6 - 3\log(2n) = 0$

2) Solve

a) $5 = \log_2(2x - 10)$

b) $9 = \log_5(x + 100) + 6$

c) $\log_3(n^2 - 3n + 5) = 2$

3) Solve. Make sure to reject any extraneous roots.

a) $\log x + \log(x - 4) = 1$

b) $\log x^3 - \log 2 = \log(2x^2)$

c) $\log(v - 1) = 2 + \log(v - 16)$

d) $\log(k + 2) + \log(k - 1) = 1$

4) Solve. Check for extraneous roots.

a) $\log\sqrt{x^2 - 3x} = \frac{1}{2}$

b) $\log\sqrt{x^2 + 48x} = 1$

5) Solve. Check for extraneous roots.

a) $\log_2(x + 5) - \log_2(2x) = 8$

b) $\log(2k + 4) = 1 + \log k$

Answer Key

1) a) 75 b) 17 c) 50

2) a) 21 b) 25 c) 4, -1

3) a) $2 + \sqrt{14}$ b) 4 c) $\frac{533}{33}$ d) 3

4) a) 5, -2 b) -50, 2

5) a) $\frac{5}{511}$ b) $\frac{1}{2}$