Precalc 11.6

ln = base e

Find natural logarithms of numbers
Solve equations and inequalities using natural logs
Solve applications with natural logs

inverse function

ln → e^x

natural logarithm

log → 10^x

e

$\log_e(\ )$

* ln e

* ln

ln x

antilog

antiln x

antiln

Evaluate each expression.

5. $\ln 0.0089$ 6. $\ln \frac{1}{0.32}$ 7. $\ln 0.21$ 8. $\text{antiln}(-0.7831)$

≈ -4.7217

$e^{?} = 0.0089$

$\ln\left(\frac{1}{0.32}\right)$

$\ln(\quad)$

1.1394

$e^{1.1394} = 3.1249$

$e^{-0.7831} =$

Ln is exponent, antiln is the number

2 Convert $\log_6 254$ to a natural logarithm and evaluate.

$6^{3.0904} =$

$\ln 6^x = \ln 254$

$x(1.7918) = 5.5373$

$x = 3.0904$

$\log 6^x = \log 254$

$x(0.7782) = 2.4048$

$x = 3.0902$

Convert each logarithm to a natural logarithm and evaluate.

9. $\log_5 132 = x$

10. $\log_3 64$

$\ln 5^x = \ln 132$

$X\ (1.6094) = 4.8828$

$X = 3.0339$

$5^{3.03} \approx$

3 Solve $6.5 = -16.25 \ln x$.

$-0.4 = \ln_e x$

$e^{-0.4} = x$

$x = 0.6703$

4 **Solve each equation or inequality by using natural logarithms.**

a. $3^{2x} = 7^{x-1}$

Use natural logarithms to solve each equation or inequality.

11. $18 = e^{3x}$ 12. $10 = 5e^{5k}$ 13. $25e^x < 100$

$\frac{}{25}$ $\frac{}{25}$

$\ln e^x < \ln 4$

$\ln_e e = ?$

$x(1) < 1.3863$

$? \quad e^1 = e$

$e^1 = e$

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