Find each value. Round to 4 decimals. Use the change of base formula for #3.

1. $\log_{10} 8 = .9031$

2. Log 6 $= .7782$

3. $\log_3 8 = \frac{\log 8}{\log 3} = 1.8927$

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Find each value. Round to 4 decimals. Use the change of base formula for #3.

1. Log 8

2. Log 6

3. $\log_3 8$

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9.5 Natural Log

$\log_{10} x$

$\log_3 5$

$\log_e$ ln

$\log_e x = x$

ln

$\cancel{\ln e}^{x}$

$\ln(732) = 6.5958$

$\pi = 3.14159265 3 \ldots$

Irrational

$e = 2.718281828 \ldots$

e^x

$e^{\wedge(\ )}$ $e^{\square}$

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$\ln 84,350 = 11.3427$

$\ln .735 = -.3078$

$\ln 100 = 4.6052$

e^5

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Investing

Growth & Decay

Investment – continuously

$A = Pe^{rt}$

A = Amount

P = invest – principle

r = rate – decimal

t = time – years

monthly – 12

quarterly – 4

daily – 365

yearly 1

Invest – number

$A = P\left(1+\frac{r}{n}\right)^{nt}$

A = Amount

P = principle

r = rate – decimal

n = number of times

t = time – years

.. rinse

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\$1000 to deposit

2.5% annual interest 2.5 = .025

compounded continuously

After 10 years?

$A = Pe^{rt}$

$A = 1000e^{(.025 \cdot 10)}$

$A = 1000e^{\wedge(.025 \cdot 10)}$

$A = \$1284.03$

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$1000 to deposit

2.5% annual interest 0.25% = .025

compounded ~~continuously~~ quarterly

After 10 years?

$A = P\left(1+\frac{r}{n}\right)^{nt}$

$A = 1000\left(1+\frac{.025}{4}\right)^{(4\cdot 10)}$

$A = 1000\left(1+.025\div 4\right)^{\wedge 40}$

$A = \$1283.03$

$\boxed{2.5\%}$ loan

savings account

6–15%

Risk – low

Risk – high

25–30%

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$1000 to deposit

2.5% annual interest 0.25% = .025

compounded continuously

① After 10 years?

$\boxed{A = Pe^{rt}}$

$A = 1000e^{.025\cdot 10}$

$A = 1000e^{\wedge(.025\cdot 10)}$

$A = \$1,284.03$

② How long?

$A = 1500$

$A = Pe^{rt}$

$\frac{1500}{1000} = \frac{1000e^{(.025t)}}{1000}$

$\frac{3}{2} = e^{.025t}$

$\ln\frac{3}{2} = \cancel{\ln e}^{.025t}$

$\ln\frac{3}{2} = .025t$

$\frac{.4054}{.025} = \frac{.025t}{.025}$

$t = 16.22$ years

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Quiz 9.5

Write each equation in exponential form.

1. $\log_5 125 = 3$
2. $\log_{13} 169 = 2$

Write each equation in log form.

3. $8^3 = 512$
4. $2^4 = 16$

Use a calculator to evaluate each expression, round to four decimal places.

5. e^4
6. ln 10

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