Sec 8.5
Solving Exponential Equations

Recall easy solving:

$$9^{x+1} = 27$$

New way to solve using logs

$$4^x = 9$$ *Take the log of both sides*

$$7^x = 93$$

$$5(2^x) = 158$$

Solving exponential
equations by factoring:

Recall: $\quad (4)(4^x) = 4^{x+1}$

so... $\quad 4^{x+1} + 4^x = 20 \quad$ can be factored

Ex:
Solve $\quad 2^{x+1} = 3^{x-1}$

Formula to recall:

Growth by percentage   Decay by percentage

$$A_f = A_i(1+i)^n$$ $$A_f = A_i(1-i)^n$$

A population of 1000 grows by 6% every year for 3 years.

An investment earns 8% per annum compounded monthly for 5 years.

A car's value depreciates at 12% per year for 6 years.

The half-life of a radioactive isotope is 65 days.

Sep 24-8:52 AM

Ex:
How long will a investment of $1000 earning 5% compounded monthly have to be invested to be worth $1500?

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The calculator work around.

Evaluate

$$\log_2 25 = x$$

write in exponential form

take the log of both sides (base 10)

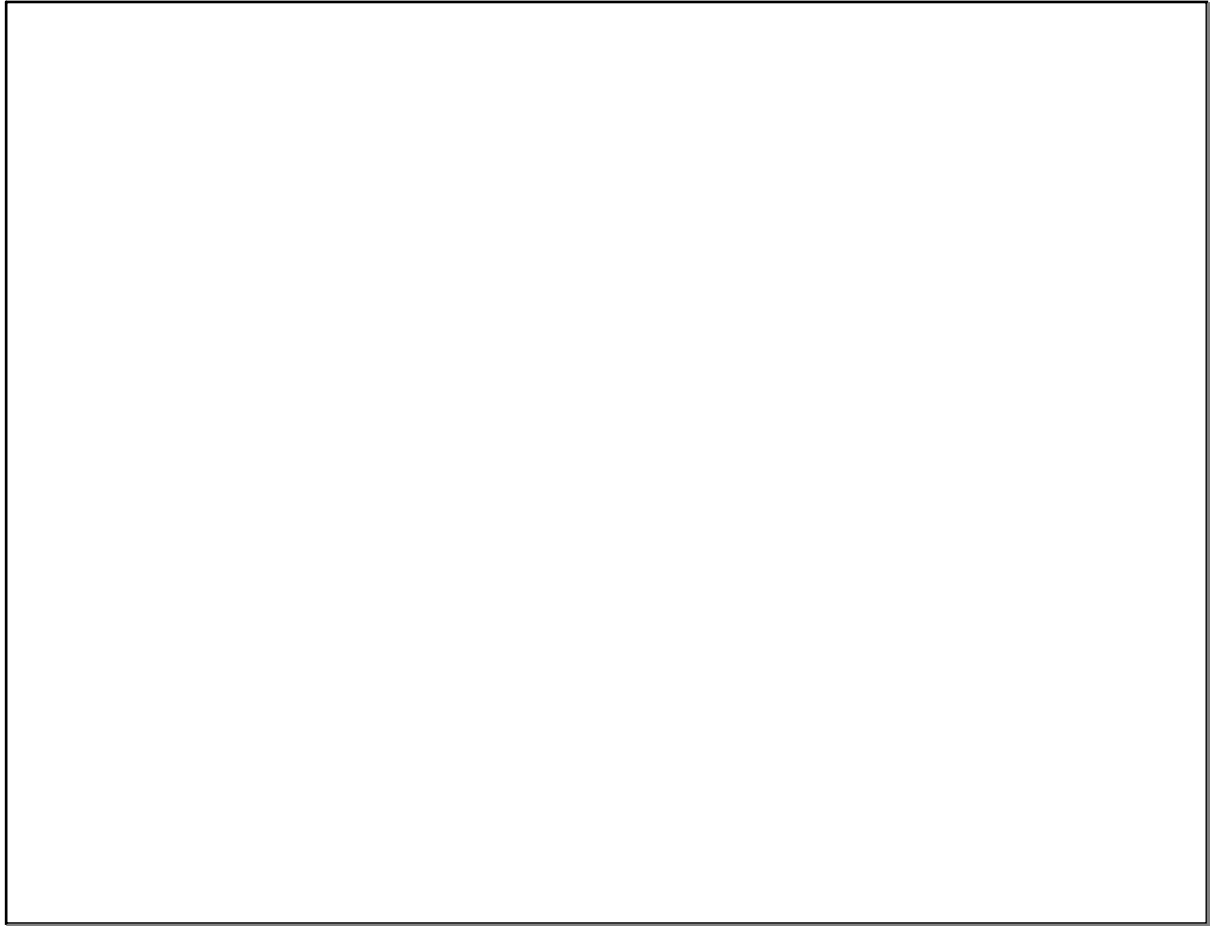$$\log_a m = \frac{\log_{10} m}{\log_{10} a}$$

$$\ln m = \frac{\ln m}{\ln a}$$

isolate x

$$\ln = \log_e$$

covered in Calculus
and Vectors course

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Homework

p485 #1-3ace, 5, 6ab, 7, 8, 10

Jan 5-10:36 AM

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