

Logarithmic Equations and Pe^{rt}

2.5.16

Springboard 24.3

Warm-up

Evaluate:

1) $4^{\log_4 5} =$

2) $\log_{10} 10^7 =$

3) $\log_3 45 + \log_3 2 - \log_3 10 =$

4) $\ln e^{x-2} =$

5) $e^{\ln(5+x)} =$

I Try:

$$\log_4(2x - 6) = 3$$

How can we get rid of the \log_4 ?

Isolate the log	
Raise both sides by the base	
Simplify and solve for x	
Check for extraneous answers	

We Try:
 $\log_3(x + 10) = 2$

Isolate the log	
Raise both sides by the base	
Simplify and solve for x	
Check for extraneous answers	

We Try:

$$\ln(x - 2) = 6$$

You Try with your partners on whiteboards:

1) $\log_2(2x + 4) = 3$

2) $\ln(x - 3) = 4$

I do:
Multistep log equations
 $\log_3 x + \log_3(x) = 1$

Combine logs	
Raise both sides by the base	
Simplify and solve for x	
Check for extraneous solutions	

We do:

$$\log_4 5x - \log_4(15) = 2$$

Combine logs	
Raise both sides by the base	
Simplify and solve for x	
Check for extraneous solutions	

We do:

$$\ln(x + 2) + \ln 5 = 3$$

Combine logs	
Raise both sides by the base	
Simplify and solve for x	
Check for extraneous solutions	

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You do:

$$\ln(x - 2) + \ln 3 = 5$$

CW

Pg 377 a,b,c

Pg378 #3-6

Continuous Compound Interest Formula

$$A = Pe^{rt}$$

$A = \text{Final Amount}$

$P = \text{Principal} \rightarrow \text{starting amount}$

$e = e$

$r = \text{Rate}$

$t = \text{Time}$

I Try:

What is the total amount for an investment of \$1000 invested at 5% for 10 years compounded continuously?

Find the givens A(Amount), P(Principal), R(rate), T(Time)	A=? P=\$1000 R=.05 T=10 years
Plug into $A = Pe^{rt}$	$A = 1000e^{(.05)(10)}$
Simplify	$A = 1000e^{.5}$ $A=1000(1.64872)$ $A = \$1648.72$

We Try:

What is the total amount for an investment of \$9876
 invested at 2% for 8 years compounded
 continuously?

Find the givens A, P, R, T	A=? P= R= T=
Plug into $A = Pe^{rt}$	$A =$
Simplify	$A =$

You Try with your partner on whiteboards:

What is the total amount for an investment of \$1234
invested at 5% for 6 years compounded
continuously?

Find the givens A, P, R, T	A=? P= R= T=
Plug into $A = Pe^{rt}$	$A =$
Simplify	$A =$