

Solving Exponential Equations III (8.4)

p412 day 7

Quiz 12

8. Solve for x.

a) $\log_5 (x - 18) - \log_5 x = \log_5 7$

b) $\log_2 (x - 6) + \log_2 (x - 8) = 3$

c) $2 \log_4 (x + 4) - \log_4 (x + 12) = 1$

d) $\log_3 (2x - 1) = \log_3 (x + 1)$

8.4)

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5b, 17. Determine the value of answers to two decimal

5. Solve for x.

a) $2 \log_2 x = \log_2 32 + \log_2 2$

b) $\frac{3}{2} \log_2 x = \log_2 125$

$\log_3 (2x-1) = \log_3 9 - \log_3 (x+1)$

$\log_3 (2x-1) = \log_3 \left(\frac{9}{x+1} \right)$

$2x-1 = \frac{9}{x+1}$

$(2x-1)(x+1) = 9$

$2x^2 + 2x - x - 1 = 9$

$2x^2 + x - 10 = 0$

$2x^2 - 4x + 5x - 10 = 0$

$2x(x-2) + 5(x-2) = 0$

$(2x+5)(x-2) = 0$

$x = -\frac{5}{2} \quad x = 2$

13. The compound interest formula is $A = P(1 + i)^n$, where A is the amount, P is the present amount, i is the interest rate expressed as a decimal, and n is the number of compounding periods. All i are annual percentage rates.
a) David inherits \$10,000 and invests it in a guaranteed investment (GIC) that earns 6%, compounded semi-annually. How long for the GIC to be worth \$15,000?

Quiz tomorrow

- b) Linda used a credit card to purchase a \$1200 laptop computer. The rate of interest charged on the overdue balance is 28% per year, compounded daily. How many days is Linda's payment overdue if the amount shown on her credit card statement is \$1241.18?

- c) How long will it take for money invested at 5.5%, compounded semi-annually, to triple in value?

$1241.18 = 1200 \left(1 + \frac{0.28}{365} \right)^{365}$

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ex1: Blue Laser bought a car for \$8500 that depreciates at 18% per year. How long until it is worth 1/2 as much?

$8500 \div 2$

$4250 = 8500 (1 - 0.18)^t$

$0.5 = (0.82)^t$

$\log 0.5 = t \log 0.82$

$\frac{\log 0.5}{\log 0.82} = t$

$3.54 = t$



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Magnitude 0
The Dukes Cuckoo running or falling into the side of your neighbor's garage

Magnitude 1
A single football player running into a tree in your yard

Magnitude 2
A cat knocking off a dinner

Magnitude 3
A cat knocking your cell phone off your nightstand

Magnitude 4
A penny falling off a dog

Magnitude 5
A key press on an IBM model M keyboard

Magnitude 6
A key press on a lightweight keyboard

Magnitude 7
A single feather fluttering to the ground

Magnitude 8
A grain of fine sand falling into the pile at the bottom of a tiny hole

Magnitude 9
A drifting mote of dust coming to rest on a table

Magnitude 10
A single feather fluttering to the ground

Magnitude 11
A single feather fluttering to the ground

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ex2: Solve $4 \cdot 3^x = 2^{3x-2}$

$\log(4 \cdot 3^x) = \log 2^{3x-2}$

$\log 4 + \log 3^x = (3x-2) \log 2$

$\log 4 + x \log 3 = 3x \log 2 - 2 \log 2$

$\log 4 + 2 \log 2 = 3x \log 2 - x \log 3$

$\log 4 + \log 2^2 = x(3 \log 2 - \log 3)$

$\log 16 = x(1.58 - \log 3)$

$\frac{\log 16}{\log \left(\frac{8}{3} \right)} = x$

$2.8 = x$

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hw: True/False sheet

Attachments

 richter small.pdf