

AA Unit 6 Review

1) Given the following sequence:

n	1	2	3	4
t_n	4	-3	-10	-17

a) Write an explicit formula for it.

$$t_n = 4 - 7(n-1)$$

$$t_n = -7n + 11$$

b) Convert the formula to function form.

$$f(n) = -7n + 11$$

may use $f(n)$ or $f(x)$, etc.

2) Given the following sequence:

n	1	2	3	4
a_n	144	-72	36	-18

a) Write an explicit formula for it.

$$a_n = 144(-0.5)^{n-1}$$

b) Rewrite the formula in function form.

$$144(-0.5)^n \left(-\frac{1}{2}\right)^{-1} = 144(-0.5)^n (-2)$$

$$g(n) = -288(-0.5)^n$$

3) Merric deposited \$3,200 in an account that pays 4.6% interest per year, compounded continuously.

a) Write a function to model this situation.

$$A = 3200e^{0.046t}$$

b) When will the balance be \$10,000? Round your answer to the nearest year.

$$10000 = 3200e^{0.046t}$$

$$\frac{25}{8} = e^{0.046t}$$

$$0.046t = \ln \frac{25}{8}$$

$$t = \frac{\ln \frac{25}{8}}{0.046}$$

$$25 \text{ years}$$

4) Waldo deposited \$550 in a savings account that pays 5.1% annual interest, compounded quarterly.

a) Write a function to model this situation.

$$A = 550 \left(1 + \frac{0.051}{4}\right)^{4t}$$

b) When will the balance be 1,200? Round to the nearest year.

$$1200 = 550 \left(1 + \frac{0.051}{4}\right)^{4t}$$

$$\frac{24}{11} = \left(1 + \frac{0.051}{4}\right)^{4t}$$

$$\log_{\left(1 + \frac{0.051}{4}\right)} \left(\frac{24}{11}\right) = 4t$$

$$4t = \frac{\log \frac{24}{11}}{\log \left(1 + \frac{0.051}{4}\right)}$$

$$15 \text{ years}$$

Review

AA Unit 6 (F.L.E.A) POE#2

When solving equations - answers should be given in the following way (moving on to the next form, when previous forms are not possible): 1) integers, 2) reduced improper or simple fractions, 3) decimals rounded to the nearest thousandth.

Solve each logarithmic equation.

5) $\log_6 78 = 3x$

$$6^{3x} = 78$$

$$\log_6 6^{3x} = \log_6 78$$

$$3x = \frac{\log_6 78}{\log_6 6}$$

$$x = \frac{\log_6 78}{\log_6 6} \div 3$$

Answer: $x = 0.811$

6) $\ln 4x = 3$

$$4x = e^3$$

$$x = \frac{e^3}{4}$$

Answer: $x = 5.021$

Solve problem #7 by using a common base. Solve problem #8 using logarithms.

7) $81^{5x+4} = 27$

$$3^{4(5x+4)} = 3^3$$

$$20x + 16 = 3$$

$$20x = -13$$

Answer: $x = -\frac{13}{20}$

8) $8^{3x} = 19$

$$\ln 8^{3x} = \ln 19$$

$$3x = \frac{\ln 19}{\ln 8} \quad x = \frac{\ln 19}{\ln 8} \div 3$$

Answer: $x = 0.472$

Exemplary.

9) Solve for x. Round your answer to three decimal places. Show your work!

$$\frac{620}{3+2^x} = 5$$

$$5(3+2^x) = 620$$

$$3+2^x = 124$$

$$-2^x = 121$$

$$2^x = 121$$

$$\log_2 121 = x$$

$$x = \frac{\log 121}{\log 2}$$

Answer: $x = 6.919$