Opening:
Review of Exponential Functions

James deposits $550 into an account that earns 16% interest annually. How much will James have in his account after 10 years?

principle

$$A = P(1 + r)^t$$

$A = ?$ $P = \$550$ $r = .16$ $t = 10$ yrs

$A = 550(1 + .16)^{10}$ (1.16)

$A = \$2426.29$

How long will James have to wait for his money to be $3000?

Logarithms

If $b^x = y$, then $\log_b y = x$.

exponential

logarithm

$a_1 = 5$

Logarithms

Solve for x.

1. $\log_3 9 = x$

$3^x = 9$ $x = 2$

2. $\log_6 \sqrt[3]{6} = x$

$6^x = \sqrt[3]{6}$ $\sqrt[3]{6} = 6^{\frac{1}{3}}$

$x = \frac{1}{3}$

3. $\log_2(-4) = x$

$2^x = -4$ $2^{-2} = \frac{1}{2^2}$

no solution

4. $\log_5 \frac{1}{125} = x$

$5^x = \frac{1}{125}$ $5^{-3} = \frac{1}{5^3}$

$x = -3$

5. $\log_{10} 0 = x$

$10^x = 0$ no solution

$10^0 = 1$

6. $\log_{\frac{1}{2}} 4 = x$

$\frac{1}{2}^x = 4$ $\left(\frac{1}{2}\right)^{-2} = \frac{2^2}{1^2}$

$x = -2$