

Chapter 3 Review

$$3^4 = 81$$

$$\log_3 81 = 4$$

Solve

$$4^x = 29$$

$$\log_4 4^x = \log_4 29$$

$$x = \frac{\log_{10} 29}{\log_{10} 4}$$

$$x = 2.429$$

Change
of base

$$4^2 = 16$$

$$4^{2.429} = 29$$

$$4^3 = 64$$

p 217

$$\log_b 2 = .3962$$

$$\log_b 3 = .5646$$

$$\log_b 5 = .8271$$

 $\log_b 15$

$$\begin{aligned} \log_b (5 \cdot 3) &= \log_b 5 + \log_b 3 \\ &= .8271 + .5646 \\ &= 1.3917 \end{aligned}$$

$$\ln x + 3(\ln y - z)$$

$$\ln x \left(\frac{y}{z} \right)^3$$

$$\ln \frac{xy^3}{z^3}$$

$$\ln x - 2 \ln y$$

$$\ln \frac{x}{y^2}$$

$$\ln a - 4(\ln b - \ln c)$$

$$\ln a - (\ln b^4 - \ln c^4)$$

$$\rightarrow \ln \frac{a}{\frac{b^4}{c^4}} \quad a \cdot \frac{c^4}{b^4}$$

$$\ln \frac{ac^4}{b^4}$$

$$\ln a - \ln b^4 + \ln c^4$$

$$\ln \frac{a \cdot c^4}{b^4}$$

$$y = 2^x$$

Growth

$$y = 2^{-x}$$

Decay

$$\ln e^5$$

$$\textcircled{5}$$

$$2 \ln e^5$$

$$2(5)$$

$$10$$

$$\log_3 7$$

Change of
base

$$\frac{\log_{10} 7}{\log_{10} 3}$$

Half Life 1599 yrs

$$A = Pe^{rt} \quad y = ae^{kx}$$

find rate
6 grams

$$A = Pe^{rt}$$

$$3 = \frac{6}{6} e^{r(1599)}$$

$$\frac{1}{2} = e^{1599r}$$

$$\ln \frac{1}{2} = \ln e^{1599r}$$

$$\frac{-0.6931}{1599} = \frac{1599r}{1599}$$

$$-0.0004335 = r$$

How much
will remain
after 1300
years

$$A = Pe^{rt}$$

$$A = 6e^{-0.0004335(1300)}$$

$$A = 3.415$$

3.4g

%

$$\frac{3.4}{6}$$

56%

9. p256

$$\log_2 (x \sqrt[3]{x-2})$$

$$\log_2 (x (x-2)^{\frac{1}{3}})$$

$$\log_2 x + \log_2 (x-2)^{\frac{1}{3}}$$

$$\log_2 x + \frac{1}{3} \log_2 (x-2)$$

12. p250

Power

$$\frac{2}{3} (\log_{10} X + \log_{10} Y)$$

Root

$$\log_{10} \sqrt[3]{X^2 Y^2}$$

