

1. Let $f(x) = 8^x$. Find the following without a calculator

(a) $f(0)$

(b) $f(2)$

(c) $f(-1)$

(d) $f(-2)$

(e) $f\left(\frac{2}{3}\right)$

2. Find exact values of the following without a calculator.

(a) $\log_3 9$

(b) $\log_5 5$

(c) $\log_5 1$

(d) $\log_5 -3$

(e) $\log_5\left(\frac{1}{125}\right)$

(f) $\log_9 3$

(g) $\log_6(6^{25})$

(h) $\log_5(\sqrt{5})$

(i) $\log_3(9^{50})$

(j) $\log_5(\sqrt[3]{5})$

(k) $\log_3(27 \cdot 27 \cdot 81)$

(l) $\log_7 \frac{1}{\sqrt{7}}$

3. Solve each logarithmic equation for x.

(a) $\log_3(x+5) = 2$

(b) $\log_x(8x-15) = 2$

(c) $2\log(7x) + 3 = 11$

4. Solve each exponential equation for x. Round answer to two decimals.

(a) $3^x = 500$

(b) $5 \cdot 4^{2x} + 8 = 50$

5. Find $\log_{17} 3567$

6. Write the inverses of the following functions.

(a) $f(x) = \log_5(x-3)$

(b) $f(x) = 2^x + 8$

7. There are 100 people on an island. Find the population 5 years later if the population...

(a) Quadruples every year

(b) Quadruples every 4 years

(c) Grows by 12% each year

(d) Reduces by 12% each year

(e) has a 1/2 life of 3 yrs

8. \$6000.00 is deposited into an account with 5.7% interest.

Calculate the balance after 10 years if interest is compounded...

(a) quarterly

(b) continuously

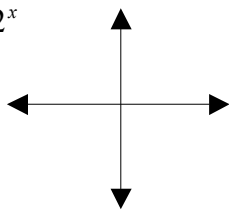
9. There are 25 milligrams of radioactive material in a coffee mug. Its half life is 30 hours.

(a) Find the amount of material 3 *days* later.

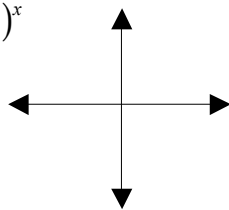
(b) Determine how long until material is reduced to just 1 milligram.

10. Sketch a rough graph of each equation. Include the asymptote, and the general shape. **No calculator.**

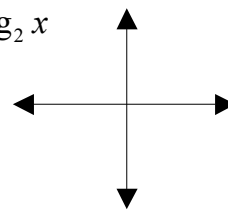
(a) $y = 2^x$



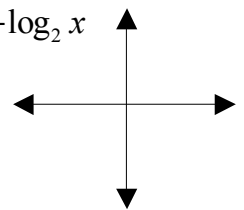
(b) $y = (\frac{1}{2})^x$



(c) $y = \log_2 x$



(d) $y = -\log_2 x$



#1(a) 1 (b) 64 (c) 1/8 (d) 1/64 (e) 4 #2(a) 2 (b) 1 (c) 0 (d) none (e) -3 (f) 1/2 (g) 25 (h) 1/2 (i) 100 (j) 10 (l) -1/2 #3(a) 4 (b) 3 or 5 (c) 1428.57 #4(a) 5.66 (b) .768

#5 2.89 #6 (a) $y = 5^x + 3$ (b) $y = \frac{\log(x-5)}{\log 2}$ or $y = \log_2(x-5)$ #7(a) 102400 (b) 565.69.17 (c) 176.23 (d) 52.77 (e) 31.5 #8(a) \$10,567 (b) \$10,609.6

#9(a) 4.73mg (b) 139.3 hours

