**Find the exact solution and a two-decimal-place approximation for it by using (a) logarithms & (b) the change of base formula.**

1. 5x = 8 2. 34-x = 5 3. = 100

**Estimate using the change of base formula**.

4. log56 5. log90.2

**Evaluate using the change of base formula (without a calculator.)**

6.  **7.**

**Find (a) the exact solution, using common logarithms, and (b) a two-decimal approximation of each solution, when appropriate.**

8. 3x+4 = 21-3x  9. 22x-3 = 5x-2 10. 2-x = 8

11. log x = 1 - log (x - 3) 12. log (x2 + 4) - log (x + 2) = 2 + log (x - 2)

13. 5x + 125(5-x) = 30 14. 3(3x) + 9(3-x) = 28

**Solve the equation without using a calculator.**

15. log(x2) = (log x)2 16. log (log x) = 2 17. =

**Sketch the graph of f, and use the change of base formula to approximate the y-intercept.**

18. f(x) = log3 (x + 5)



**Sketch the graph of f, and use the change of base formula to approximate the x-intercept.**

19. f(x) = 4x - 3



20. Use the compound interest formula to determine how long it will take for a sum of money to double if it is invested at a rate of 6% per year compounded monthly.

21. If a 100-milligram tablet of an asthma drug is taken orally and if none of the drug is present in the body when the tablet is first taken, the total amount A in the bloodstream after t minutes is predicted to be

 A = 100[1 - (0.9)t] for 0 ≤ t ≤ 10.

(a) Sketch the graph of the equation. (b) Determine the number of minutes needed for 50 milligrams of the drug to have entered the bloodstream.

