**Pre-Calculus 12 Practice Test Chapter Four**

1. Consider the exponential function y = 0.3x.
   1. Make a table of values and sketch the graph of the function.
   2. Identify the domain, range, intercepts, and intervals of increase or decrease as well as any asymptotes.
2. Identify the transformation(s) used in each case to transform the base function y = 3x.

1. Write the equation of the function that results from each set of transformations and then sketch the graph of the function.
   1. f(x) = 5x is stretched vertically by a factor of 4, stretched horizontally by a factor of ½, reflected in the y-axis, and translated 1 unit up and 4 units to the left.
   2. g(x) = (1/2)x is stretched horizontally by a factor of ¼, stretched vertically by a factor of 3, reflected in the x-axis, and translated 2 units to the right and 1 unit down.
2. Write each as a power of 6.
   1. 36
   2. 1/36
   3. (5
3. Solve each equation.
   1. 35x = 27x-1
   2. (1/8)2x+1 = 32x-3
4. Solve for x. Round answers to two decimal places.
   1. 3x-2 = 5x
   2. 2x-2 = 3x+1
5. Determine the value of x.
   1. log125 x = 2/3
   2. log9 1/81 = x
   3. log3 27 = x
   4. logx 8 = ¾
   5. 6log x = 1/36
6. Describe, in order, a series of transformations that could be applied to the graph of y = log5 x to draw the graph of each function.
   1. y = -log5 (3(x-12)) +2
   2. y + 7 = (log5(6-x))/4
7. Identify the following characteristics of the graph of the function y = 3log2 (x+8) + 6.
   1. The equation of the asymptote
   2. The domain and range
   3. The y-intercept
   4. The x-intercept
8. Write each expression in terms of the individual logarithms of x, y, and z.
   1. log5 (x5)/(yz)
   2. log ((xy2)/z)
9. Write each expression as a single logarithm in simplest form.
   1. log x-3 log y + (2/3) log z
   2. log x – (1/2)(log y + 3 log z)
10. Write each expression as a single logarithm in simplest form. State any restrictions.
    1. 2 log x + 3 log √x – logx3
    2. log (x2 – 25) – 2 log (x + 5)
11. Use the laws of logarithms to simplify and hen evaluate each expression.
    1. log6 18 – log6 2 + log6 4
    2. log4 √12 + log4 √9 – log4 √27
12. Determine the value of x to two decimal places.
    1. 32x+1 = 75
    2. 7x+1 = 42x-1
13. Determine x.
    1. 2 log5 (x-3) = log5 (4)
    2. log4 (x+2) – log4 (x-4) = ½
    3. log2 (3x +1) = 2 – log2 (x-1)
    4. log (x2 – 21x) = 1
14. A computer depreciates 32% per year. After how many years will a computer bought for $1200 be worth less than $100?
15. Technetium-99m (Tc-99m) is the most widely used radioactive isotope for radiographic scanning. It is used to evaluate the medical condition of internal organs. It has a short half-life of only 6 hours. A patient is administered an 800-MBq dose of Tc-99m. If none is lost from the body, when will the radioactivity of the Tc-99m in the patient’s body be 600 MBq? Answer to the nearest tenth of an hour.