Chapter 9, 10, 11 Review

1) Graph the exponential function: $f(x) = 2^x$

2) Evaluate:

a) $2^{3.4}$ b) $e^{2.3}$ c) $log_4 4^6$ d) $6^{log_6 9}$

3) If f(x) =7x +1 and g(x) = $x^2 - 9$, find

a) $(g \circ f)(x)$ b) $(f \circ g)(2)$

4) Find the inverse of f(x) = 7x – 5

5) What is the horizontal line test?

6) If given the exponential form, change to logarithmic form. If given logarithmic form, change to exponential form

a) 2 = $log_5 x$ b) $b^3 = 8$

7) Solve the equation:

a) $log_4 16$ b) $10^{log \sqrt{x}}$ c) $5^x = 134$ d) $log_4(x + 3) = 2$

8) Expand the expression as much as possible: $log_6 \left(\dfrac{\sqrt[3]{x}}{36y^4} \right)$

9) Write as a single logarithm: $4log_b x - 2log_b 6 - \dfrac{1}{2}log_b y$

10) Use common logarithms to evaluate $log_5 140$

11) The half-life of the radioactive element plutonium 239 is 25 000 years. If 16 grams of plutonium 239 are initially present, how many grams are present after 25 000 years.

12) Find the center and radius of the circle that has the equation:
$x^2 + y^2 + 8x + 4y + 16 = 0$.

13) Find the distance and midpoint between (-1, 4) and (3, -2).

14) Find the center and radius of the circle that has the equation:
$$(x + 3)^2 + (y - 1)^2 = 9$$
14) Write the equation of a circle that has a center of (3, -2) with a radius of 5 inches.

15) Find the sum: $\sum_{k=1}^{n5} 5k$

16) Rewrite using summation notation: 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9

17) Find the common difference: 2. 6, 10, 14, …

18) Write the first five terms of the arithmetic sequence given the first term, $a_1 = 200$ and the common difference, d = 20

19) Find a_6 when a_1=13, and d = 4

20) Find the sum of the first 50 terms of the arithmetic sequence: -15, -9, -3, 3, …

21) Find the common ratio of the geometric sequence: -2, 6, -18, 54, . . .

22) Write the first five terms of the geometric sequence if the first term, $a_1 = 2$ and the common ratio r = 3.

23) Find a_8 of the geometric sequence if a_1=6 and r = 2

24) Find the sum of the infinite geometric series: $1 - \frac{1}{2} + \frac{1}{4} - \frac{1}{8} + . . .$