SEMESTER REVIEW QUESTIONS

1. Evaluate:

2. Find   if

3. Using Newton's Method, find the zero of the function   between   and   .

4. Find:

5. Evaluate:

6. Define $g \, (\, 4 \,)$ so the function   is continuous at $x \; = \; 4.$

7. *Find an equation of the a) tangent line and b) normal line to the curve*   *at x = 1.*

8. Find   if $f \, (\, x \,) = g \, (\, x \,) \, h(\, x \,) \, .$ Given:

9. At time $t = 0$, a diver jumps from a diving board that is 32 feet above the water. The position of the diver is given by

$\qquad\qquad$ where s is measured in feet and t is measured in seconds.

  A) When does the diver hit the water?

  B) What is the diver's velocity at impact?

10. Evaluate:

11. Find   if

12. Find the point(s) at which the graph of the function   is NOT continuous. State whether the discontinuity is
        removeable or nonremoveable.

13. Evaluate:

14. Evaluate:

15. Find the *average rate of change* of the function   on the interval [0, 2].

16. Find an equation of the line tangent to the curve   at $x = 2$.

17. Find   if   . Express answer in a single fraction.

18. Find   if

19. Find   implicitly:

20. Determine the extrema and the point(s) of inflection for the graph of the function

21. *Find the value of k so the function   is continuous at x = 5.*

22. The derivative of $y = f(x)$ is   . At what value(s) of x does the graph of f
    have a) a relative
    minimum and b) a relative maximum. Justify your answer.

23. Find the vertical asymptote(s) of

24. Find the end behavior asymptote (horizontal, slant, or oblique) of

25. For what value(s) of k will   have a relative (local) maximum at $x = 2$?