MAT 1340                          Week 5 Written Assignment
50 points                           Covers Sections 2.1 – 2.3
2.1 – Functions
2.2 – Graphs of Functions
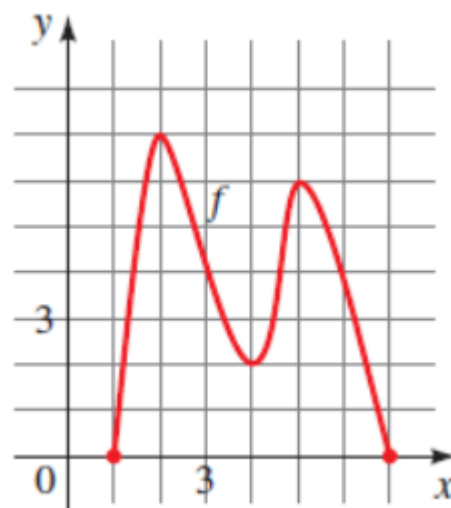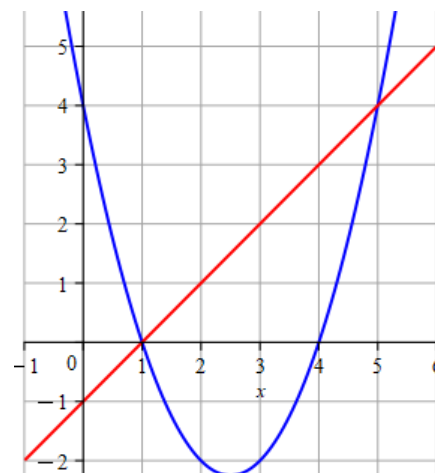2.3 – Getting Info from the Graph of an Equation.

Be sure to follow College Algebra formatting guidelines in your work.  We will be doing a lot more with
graphing techniques in future weeks.

1.  (5 pts)  Refer to the figure on the right and fill in the blanks
    below, about $f(x)$.

    a.   Domain =

    b.   Range =

    c.   $f$ is increasing on

    d.   $f$ is decreasing on

    e.   State the local maximum and minimum values.  Report
         these values as ordered pairs, i.e., as points in the
         plane, like $(x, y) = (4, f(4)) = (4, 2)$, where $x = 2$ is
         where we obtain a $y$-value or $f(x)$-value of 4.

    f.   State the solutions of the equation $f(x) = 0$. Give your solutions as a set.

2.  We show the graphs of $f(x) = x^2 - 5x + 4$ and $g(x) = x - 1$ on the
    same set of coordinate axes on the right.  I want you to solve the equation
    $f(x) = g(x)$ in two ways:

    a.   (5 pts)  Using the graph at the right.

    b.   (5 pts)  Algebraically.

    Give your answers in the form of a solution set, that is, a statement of
    the form $x \in \{2,5\}$.  Circle answers, of course.

3.  (5 pts)  Using the same figure on the right, fill in the following:

    a.   $f(2) =$

    b.   $g(3) =$

    c.   The set of all $x$ such that $f(x) = 4$ is...

4.  (5 pts)  Sketch the graph of $f(x)=x^2-5x-24$, $-4\le x\le 9$.  State its domain and range.

5.  (5 pts)  What is the domain of $g(x)=\sqrt{x^2-5x-24}$?

6.  Let $f(x)=x^2-5x-24$.

    a.  (5 pts)  Find $f(x+2)$.

    b.  (5 pts)  Find $f(x)+f(2)$.

7.  Let $s(x)=x^2-5x$

    a.  (5 pts)  Find the *net change* in $s$ from $x=1$ to $x=5$.

    b.  (5 pts)  Find the *average rate of change* in $s$ from $x=1$ to $x=5$.

    c.  (5 pts)  Simplify the difference quotient for $s$:  $\dfrac{s(a+h)-s(a)}{h}$.