Net/Total Area

Introduction
In algebra we didn't take notice or even acknowledge the idea of negative e area. However, in calculus - we see several instances of this. If the curve e is entirely below the *x*-axis on an interval, then the area will be negative. If it is entirely above, then the area will be positive. Also, we know that the physical net area between a curve and the *x*-axis from < I>a to *b* should be the same as the area from *b* to *a*. For these reasons, it is necessary to distinguish the differences. If you do not have *Mathematica*, you can download a free copy of *Math Reader* at http://www.wolfram.com/products/mathreader/

Activity
Each of the sections in Mathematica are separated and you have to execute each cell. To do this, click anywhere in the line, and press either the Enter key on your numeric keypad, or use Shift-Enter on your keyboard. After you clear and load the graphics package, the next line defines a function on an appropriate interval. Execute the next line and see your curve with the area between itself and the *x*-axis shaded in. You may need to adjust the range of the graph, depending on your function. The next section locates the zeros of the function on this interval by either using the FindRoot[ ] or the Solve[ ] command in *Mathematica*. Notice the limits of integration on each of the intervals. The last couple of lines calculate the net and total area for the function on [a,b].

If you have a copy of *Mathematica*,

1. Create another function. If your curve does not cross the *x*-axis on the interval you gave, try to come up with one that does.

2. Locate the zeros

3. Change the limits of integration

4. Calculate the net and total area.

Question to Address
Question 1
Give a real-world example where calculation of the total area would be important rather than just the net area from *a* to *b*.