Michael Young* (myoung@iastate.edu). Rainbow arithmetic progressions in the integers. A $k$-term arithmetic progression is a sequence of the form $a, a + d, a + 2d, ..., a + (k - 1)d$, where $a$ and $d$ are nonegative integers. Van der Waerden’s Theorem states that given a set of colors there exists an interval $[1, n]$ such that any coloring of the integers, using all the colors, will contain a $k$-term arithmetic progression with each term having the same color. Given a set of colors and $k > 0$, actually determining $n$, called a van der Waerden number has proven to be a very challenging problem. In this talk, we will discuss some known results about van der Waerden numbers and introduce anti-van der Waerden numbers. An anti-van der Waerden number is the number of colors needed to guarantee that any coloring of the interval $[1, n]$ with all the colors must contain a $k$-term arithmetic progression with each term having a distinct color. (Received July 25, 2014)