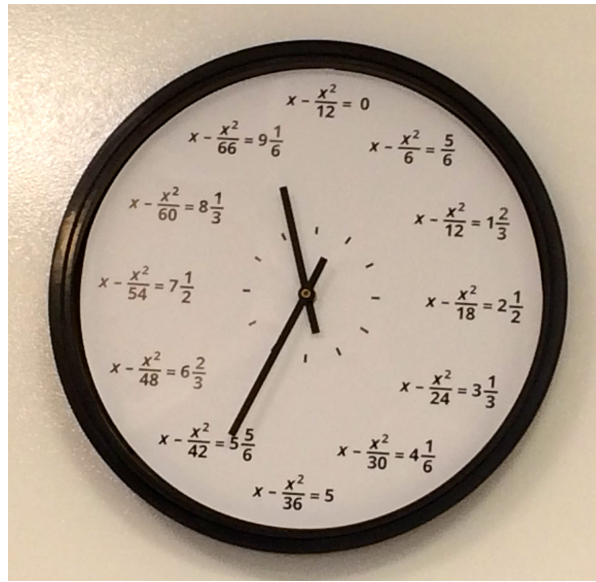


MATH 135-04 Calculus 1, Fall 2015

The Quadratic Clock



Above is a photograph of a clock I saw on the wall during a recent visit to MIT's renowned Sloan School of Management. It is notable because the clock features quadratic equations in place of the usual hours. We shall call this special clock the *quadratic clock*.

1. What do you notice about the different quadratic equations? Can you find a pattern to the equations as you move clockwise around the clock?
2. Solve some of the quadratic equations shown. There are two solutions to each equation (it's quadratic after all). Interpret your results in terms of time. Generalize your findings and explain how this clock works.
3. When I first saw this particular quadratic clock, I guessed that the solutions (without solving) were revealing something different than they actually do. Can you think of another way to construct a quadratic clock where having two solutions per hour makes sense in terms of time? What would the corresponding equations look like? *Hint:* This new clock would make more sense in Europe than the United States.