

Using TI-84 to Solve Quadratics

Method 1:

- Set equation equal to zero

- Place equation into Y =



EX: $Y1 = 2x^2 + 5x - 3$

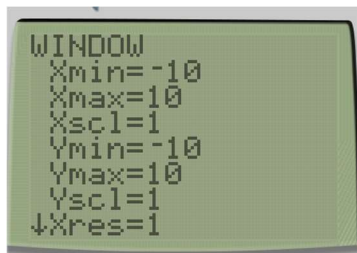
- Reset Zoom – Standard



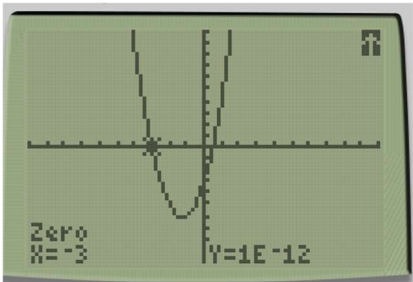
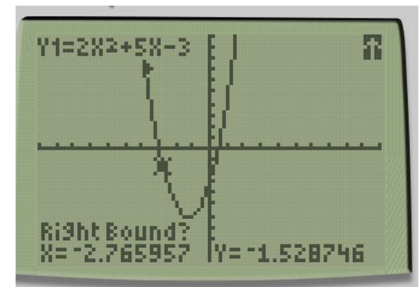
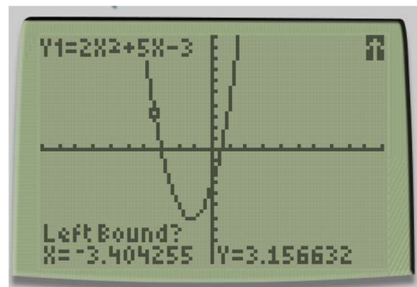
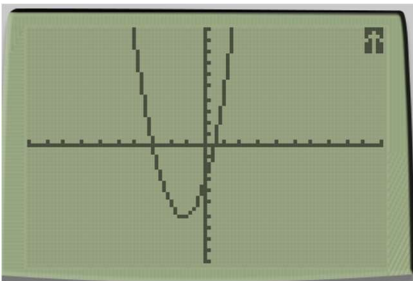
- Graph



- Be sure x – intercepts are in view. If not, use Window menu to adjust axis.



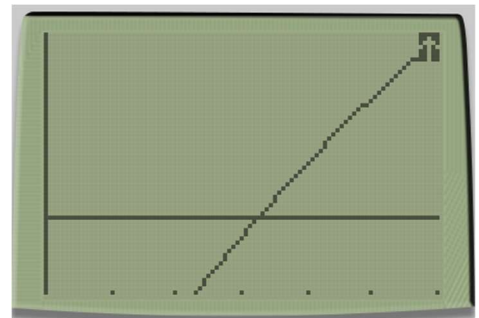
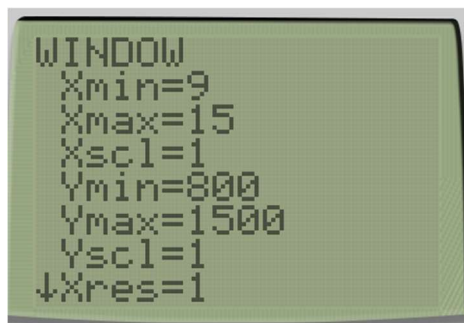
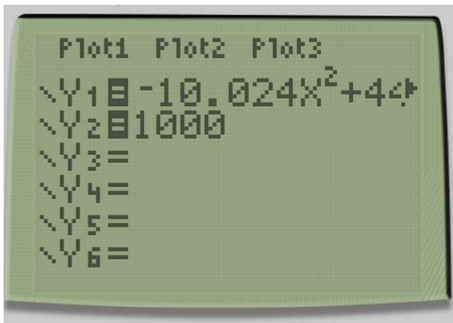
- Calculate Zero (x- intercept). Must do twice for quadratics (2 solutions)
 - 2nd -> Trace -> 2: Zero
 - Left Bound?
 - Using Left/Right arrows, move cursor to the *left side* of your first zero.
 - Hit Enter
 - Right Bound?
 - Using Left/Right arrows, move cursor to the *right side* of your first zero.
 - Hit Enter
 - Guess?
 - Hit Enter
 - Answer Displayed at bottom (-3, 0)
 - Repeat Process for Second intercept/Zero



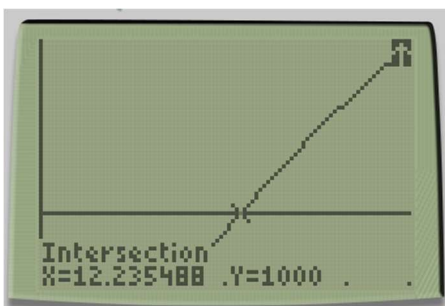
*NOTE: $Y=1E-12$ is 0.000000000001 (ZERO...It's a rounding thing)

Method 2:

- From 2009 through 2015, the number of monthly active Facebook users F (in millions) worldwide can be approximated by the quadratic equation $F = -10.024t^2 + 448.79t - 2990.5$, $9 \leq t \leq 15$ where t represents the year, with $t = 9$ corresponding to 2009. According to the model, in which year did the number of users reach one billion (1000 million)?
- Determine what we are wanting to determine.
 - We want to determine when $F = -10.024t^2 + 448.79t - 2990.5 = 1000$
- Place function F into Y1; Place 1000 into Y2.
 - Use X as variable instead of t . Remember, Shortcut Button X 
- Pay attention to t (domain) values ($9 \leq t \leq 15$). Need to adjust Window Settings accordingly. Should also consider range values (we are trying to see when $F = 1000$, so might want to change YMIN and YMAX accordingly).



- Graph
- Calculate the Intersection of the 2 graphs.
 - 2nd -> Trace -> 5: intersect
 - First curve?
 - Using Right/Left arrows, get close to intersection point of graphs.
 - Hit Enter
 - Second curve?
 - Using Right/Left arrows, get close to intersection point of graphs.
 - Hit Enter
 - Guess?
 - Hit Enter



*NOTE: Intersection point displayed at bottom of screen.

Answer: In approximately the year 2021 (around March), the number of users reached one billion.