Roots Graphing Worksheet

Name _____

Purpose: By the end of this activity, you will be able to find the roots (x-intercepts) to a quadratic equation by graphing.

Directions: Use a graphing calculator to answer the following.

Preliminary Setup:
Turn [ON] the calculator (located on the bottom left of the calculator)
Press [Y=] and after the $Y_1 =$ press [CLEAR] (which is found under the down blue arrow)
Press [ZOOM], and then press [6] (for standard)
   On TI81's press [RANGE] and change the Xmin = -10 to **Xmin = -9**   or
   On TI82's and TI83's press[WINDOW] and change the Xmin = -10 to **Xmin = -8.8**

I. Find the *exact* integer roots to the following problems by graphing and tracing over to the x-intercept

1) Press [Y=] and after the $Y_1 =$ enter: $x^2 - 1x - 6$ by entering
       on TI81's: [x | T] [x^2] [-] [1] [x | T] [-] [6]   or   *Note: Use a *minus* sign NOT the negative (-) sign
       on TI82's and TI83's: [x , T ,θ] [x^2] [-] [1] [x , T ,θ] [-] [6]
    Press [GRAPH]
    Press [TRACE]
    a) To find the first root (i.e. an x-intercept) press the left blue arrow until Y = 0 ✍Answer: X = _____   when Y = 0

    b) To find the other root (x-intercept) press [TRACE] and press the right blue arrow until Y = 0
                                                                           ✍ Answer: X = _____   when Y = 0

2) Press [Y=] and after the $Y_1 =$ enter: $x^2 + 4x - 5$ then press [GRAPH], then press [TRACE]
    a) To find the first root (i.e. an x-intercept) press the left blue arrow until Y = 0✍ Answer: X = _____   when Y = 0

    b) To find the other root (x-intercept) press [TRACE] and press the right blue arrow until Y = 0
                                                                           ✍ Answer: X = _____   when Y = 0

3) Find a root of $Y_1 = x^2 - 8x + 16$ ✍ Answer: X = _____   when Y = 0

4) Find a root of $Y_1 = x^2 + 2x + 4$ ✍ Answer: X = _____   when Y = 0

New setup:
Press [Y=] and after the $Y_1 =$ press [CLEAR] (which is found under the down blue arrow)
   On TI81's press [RANGE] and change the Xmin = -9 to **Xmin = -5** and the Xmax = 10 to **Xmax = 5**   or
   On TI82's and TI83's press [WINDOW] and change the Xmin = -8.8 to **Xmin = -5** and the Xmax = 10 to **Xmax = 5**

II. Find the consecutive integers between which the roots to the following problems are located

1) Let $Y_1 = 4x^2 - 9$ then press [GRAPH]   Note: There are no integer roots.
    a) One root is between the two negative integers of   ✍ _____ and _____

    b) The other root is between the two positive integers of   ✍ _____ and _____

2) Let $Y_1 = 3x^2 + 2x - 10$
    a) One root is between the two negative integers of   ✍ _____ and _____

    b) The other root is between the two positive integers of   ✍ _____ and _____

Press [Y=] and after the $Y_1 =$ press [CLEAR] (which is found under the down blue arrow)
Turn [OFF] the calculator by pressing [2nd] (blue button - top left) and then [ON]