DIGITLE – SAT/ACT
Puzzle 507 – Quadratic Functions

Directions: The first 5 problems have single digits answers. The 6th problem has a 5-digit answer (counting leading zeros if present). You have a choice: solve the easier single-digit answer problems or tackle the more difficult 5-digit answer. Once you have done that, attempt to solve the puzzle by entering the following url on your computer, tablet, or phone: https://mastermathmentor.com/mmm/digitle.ashx.
The correct puzzle answer will be the digits of your answer(s) scrambled. Use the following interpretation. You get 6 tries.

| Green : | the digit is in the answer and is in the correct spot. | Grey : | the digit is not in the answer. |

Yellow: the digit is in the answer but is not in the correct spot.

Single Digit Answers:

1) Given the function $y = 3x^2 - 11x - 20$, what is the positive root of the function?

2) If the equation $3x^2 = 5 - 2x$ is solved using the quadratic formulas, what is the square root of the discriminant?

3) If $f(x) = x^2 - 5$ and $g(x) = -x^2 + 8x - 5$, find the slope of the line between the vertices of the two parabolas.

4) Given $y = 2x^2 - 8x + 9 - k$, what is the value of k such that the parabola has only one root?

5) At how many points do the graphs of the equations $y - 1 = 2(x + 2)^2$ and $y - 9 = -2(x - 1)^2$ intersect?

5-Digit Answer:

6) You are given two quadratic functions. The first has vertex (2, 18) and passes through (3, 19). The second has vertex (3, 21) and passes through (2, 22). Both are expressed in general form: $y = Ax^2 + Bx + C$ and ABC is calculated for each. What is the product of those calculations?