Math Wars – SAT/ACT
Topic 510 – Quadratic Functions/Parabolas

Maximum Time: 8 Minutes

Directions: To start, you need to download the Math Wars application on your cell phone: Use the QR code or the url: https://mastermathmentor.com/mmm/mathwars.ashx?key=510

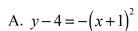When ready, start the timer and then solve the problems below, entering your choice, A, B, C, D and pressing $\boxed{\text{Submit}}$ for each problem when you are sure of your answer. When complete, stop the timer. You will see problems you got correct in green and incorrect in red. You will receive a score based on how many problems you got right and your time. A perfect score is all problems correct using half the maximum time or less. You can text or email your friends with your results.

1. (1 pt) If $3x^2 - 2x + 4 = 0,$ determine the nature of the roots.

   A. 2 real   B. 1 real   C. 2 imaginary   D. 1 real, 1 imaginary

2. (3 pts) The graph of $f(x)$ is in the figure to the right. Find its possible equation.
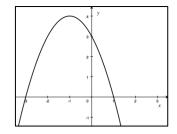
   A. $y - 4 = -(x+1)^2$ B. $y + 4 = -(x+1)^2$

   C. $y - 4 = -(x-1)^2$ D. $y + 4 = -(x-1)^2$

3. (5 pts) Given $y = (x-5)(x+8),$ find the smallest possible of y.

   A. –1.5   B. –42.25   C. –33.25   D. –36.25

4. (7 pts) Given $y = 2x^2 + 8x - 5 + k,$ what is the value of k such that the paraobola has only one root?

   A. –13   B. 13   C. –2   D. 2

5. (9 pts) If the parabola $y = 4x^2 + 20x + 2$ is expressed in the form $a(x-b)^2 + c$, find the value of abc ?

   A. –230   B. 230   C. 42.5   D. –42.5