

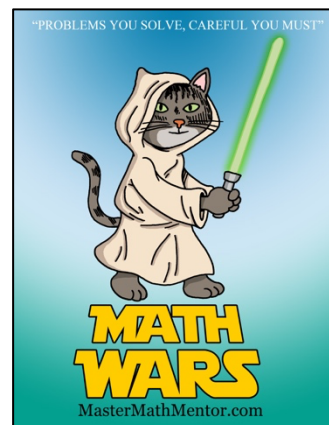
Math Wars – SAT/ACT

Topic 512 – Functions/Transformations



Maximum Time: 7 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=512>



When ready, start the timer and then solve the problems below, entering your choice, A, B, C, D and pressing 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 $f(x) = 3x - 2$ and $g(x) = f(x - 2)$, find $g(-2)$.

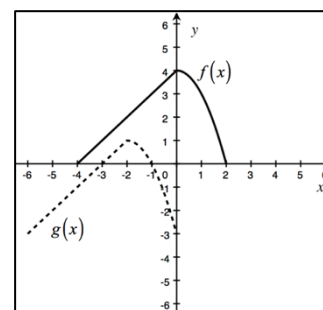
- A. -18 B. -10 C. -14 D. -6

2. (3 pts) If $g(x) = 3x - 1$ and $h(x) = -2x^2 + 1$, order the following from highest to lowest.

- I. $g(h(1))$ II. $h(g(1))$ III. $h(h(1))$

- A. III, I, II B. III, II, I C. I, III, II D. II, I, III

3. (5 pts) Examine the figure to the right. $f(x)$ is the solid curve and $g(x)$ is a transformation of $f(x)$ shown as a dashed curve. Which of the following is the equation of $g(x)$?



- A. $g(x) = f(x + 2) - 3$ B. $g(x) = f(2x - 3)$
 C. $g(x) = f(2x + 3)$ D. $g(x) = f(x - 2) - 3$

4. (7 pts) Let $f(x) = -2x - 3$. Let $g(x)$ be the reflection of $f(x)$ across the y -axis. Let $h(x)$ be the reflection of $g(x)$ across the x -axis. If $x = 3$, find the corresponding point on h .

- A. (3, 9) B. (3, -9) C. (-3, 9) D. (-3, -9)

5. (9 pts) In the figure to the right $f(x)$ is the solid and $g(x)$ is the dashed curve. Evaluate the following expressions and determine how many distinct values there are.

I. $f(g(1))$

II. $f(g(4))$

III. $g(f(2))$

IV. $g(f(4))$

A. 1

C. 3

B. 2

D. 4

