

# Math Wars – AB Calculus

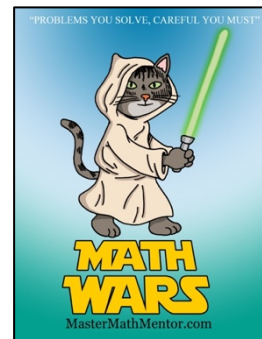
## Topic 126 – The Accumulation Function



Maximum Time: 6.5 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=126>

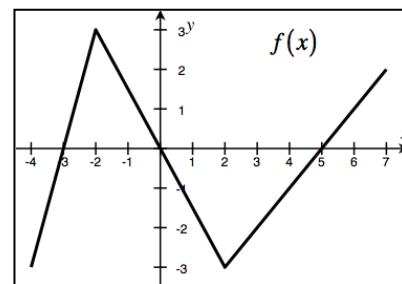


When ready, start the timer and then solve the problems below, entering your choice, A, B, C, D and pressing **Submit** for each problem when you are sure of your answer. When complete, stop the timer. You will see problems you got correct in green and incorrect in red. You will receive a score based 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) The graph of the piecewise linear function  $f$  is shown in the figure to

the right. If  $g(x) = \int_7^x f(t) dt$ , what is the value of  $g(-3)$ ?

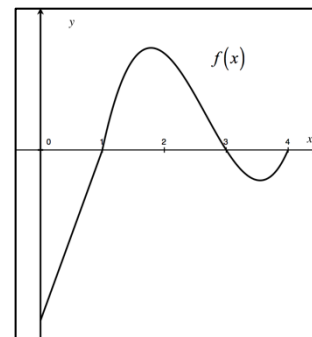
- A. -5  
B. -1  
C. 1  
D. 5



2. (3 pts) The graph of the function  $f$  is shown to the right. Let  $g$  be the continuous

function defined by  $g(x) = \int_0^x f(t) dt$ . For what value of  $x$  does  $g$  have a relative maximum?

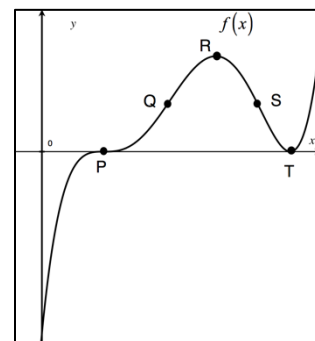
- A.  $x = 0$   
B.  $x = 1$   
C.  $x = 2$   
D.  $x = 3$



3. (5 pts) The graph of the function  $f$  is shown to the right. Let  $g$  be the continuous

function defined by  $g(x) = \int_0^x f(t) dt$ . For what value of  $x$  does  $g$  have an inflection point?

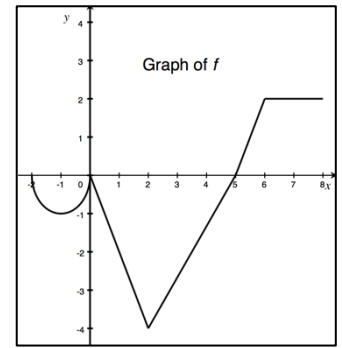
- A. Q and S  
B. P, Q, and S  
C. R and T  
D. P, R and T



4. (7 pts) The graph of the function  $f$ , made up of a semi-circle and straight lines,

is shown in the figure to the right. If  $F(x) = \int_{-2}^x f(t) dt$ , find the value of

$$F(7) + F'(7) + F''(7).$$



A.  $-7 - \pi$

B.  $-5 - \pi$

C.  $-7 - \frac{\pi}{2}$

D.  $-5 - \frac{\pi}{2}$

5. (9 pts)  $\frac{d^2}{dx^2} \int_{\pi}^{2x} (e^{-t} - \cos 2t + 1) dt =$

A.  $-2e^{-2x} - 4\sin 4x$

B.  $-4e^{-2x} - 8\sin 4x$

C.  $2e^{-2x} + 2\cos 4x + 2$

D.  $-4e^{-2t} - 8\sin 4t$