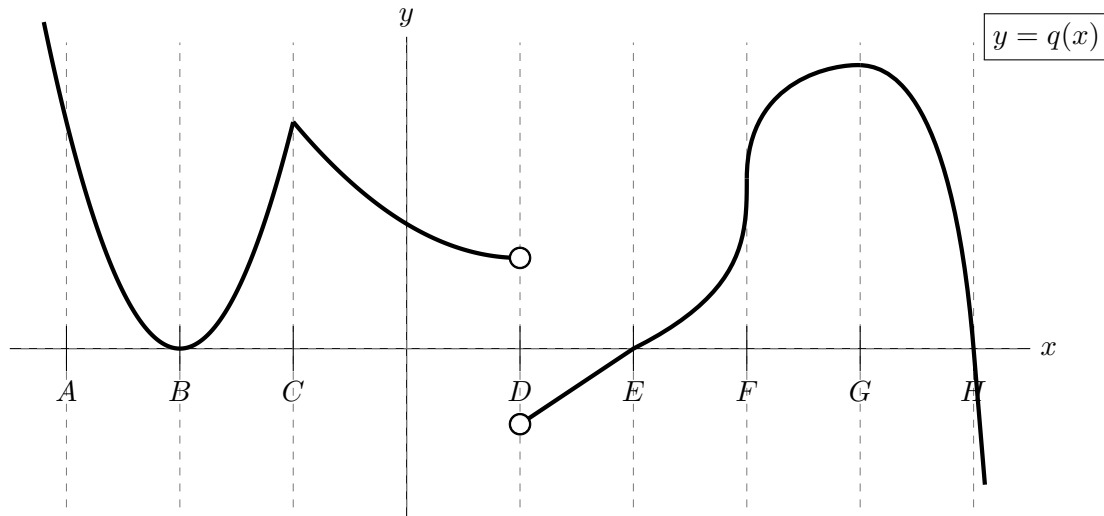


1. [12 points] A portion of the graph of a function  $q(x)$  is shown below. Note that
- the graph of  $y = q(x)$  has a sharp corner at  $x = C$ ,
  - the  $x$ -intercepts of the graph of  $y = q(x)$  are at  $x = B$ ,  $x = E$ , and  $x = H$ , and
  - the tangent line to the graph of  $y = q(x)$  at  $x = F$  is vertical.



Let  $Q(x)$  be an antiderivative of  $q(x)$  that is defined and continuous on the interval  $A \leq x \leq H$ .

For each of the questions below, circle ALL of the available correct answers.  
(Circle NONE if none of the available choices are correct.)

- a. [2 points] At which of the following six values of  $x$  is  $q(x)$  not differentiable?

$A$        $B$        $C$        $F$        $G$        $H$       NONE

- b. [2 points] At which of the following eight values of  $x$  does  $q(x)$  have a local maximum?

$A$        $B$        $C$        $D$        $E$        $F$        $G$        $H$       NONE

- c. [2 points] At which of the following eight values of  $x$  does  $Q(x)$  have a critical point?

$A$        $B$        $C$        $D$        $E$        $F$        $G$        $H$       NONE

- d. [2 points] At which of the following eight values of  $x$  does  $Q(x)$  have a local maximum?

$A$        $B$        $C$        $D$        $E$        $F$        $G$        $H$       NONE

- e. [2 points] At which of the following eight values of  $x$  does  $Q(x)$  have an inflection point?

$A$        $B$        $C$        $D$        $E$        $F$        $G$        $H$       NONE

- f. [2 points] At which of the following seven values of  $x$  is  $q'(x)$  (the derivative of  $q$ ) a negative number?

$A$        $B$        $C$        $E$        $F$        $G$        $H$       NONE