

## AP Calculus Quiz Practice

### Graphing Calculator

A particle is moving along the x-axis on the time interval  $[0,8]$ . The velocity of the particle is given by  $v(t) = 2\sin(e^{t/4}) + 1$  and  $x(0) = 2$ .

1. Find the acceleration at $t = 4$ .	2. At what time(s) does the particle change direction?
2. Find the position of the particle at $t = 8$ .	4. Find the time(s) when the particle's acceleration is zero.
5. Find the total distance traveled on $[0,8]$	6. Find the average velocity on $[0,8]$

Given  $f(x) = 2x\sin(2x)$  for  $0 < x < 3$

7. State the x-value(s) of the local minimum(s).	8. State the interval(s) where the function decreasing.
9. Find the x-coordinate(s) of the points of inflection.	10. State the interval(s) where the function is concave down.

Answers (rounded to 3 decimal places)

1.  $a(4) = 1.822$
2.  $t = 1.806, 6.201$
3.  $x(8) = 14.407$
4.  $t = 4.925, 7.448$
5.  $14.756$
6.  $1.551$
7.  $x = 2.457$
8.  $(1.014, 2.457)$
9.  $x = 0.538, 1.822$
10.  $(0.538, 1.822)$

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