4.3 Parametric Functions and Rates of Change

AP Precalculus   Name: _____

A particles motion in the xy-plane is modeled by the parametric function $x(t) = |t - 4|$ and $y(t) = t + 1$.
Use this function to answer the problems below.

1. Determine the direction of the particle's motion on the interval $-6 \le t \le -3$.

2. Compute the average rate of change of $x(t)$ over the interval $-6 \le t \le -3$.

3. Compute the average rate of change of $y(t)$ over the interval $-6 \le t \le -3$.

4. Calculate the slope of the line between the points that correspond to $t = -6$ and $t = -3$.

5. Without the use of technology, determine which set of parametric equations will produce the same path as $f(t) = (|t + 2|, t + 1)$, but will have a direction of particle motion in the opposite direction?

      (A) $x(t) = |-t + 2|$, $y(t) = -t + 1$

      (B) $x(t) = |t - 2|$, $y(t) = -t - 1$

      (C) $x(t) = |t + 2|$, $y(t) = -t + 1$

      (D) $x(t) = t + 1$, $y(t) = |t + 2|$

Answers to 4.3 CA #1

1. x-values are decreasing, y-values are increasing. The direction is left and up.	2. Avg rate of change of $x(t)$ is -1.	3. Avg rate of change of $y(t)$ is 1.
4. Slope $= -1$	5. A	

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