Quiz # 2 — 09/08/16

Answer all questions in a clear and concise manner. Remember that answers without explanation or that are poorly presented may not receive full credit.

1. Pictured below is the graph of $y = f(x)$. Which of the following is true?

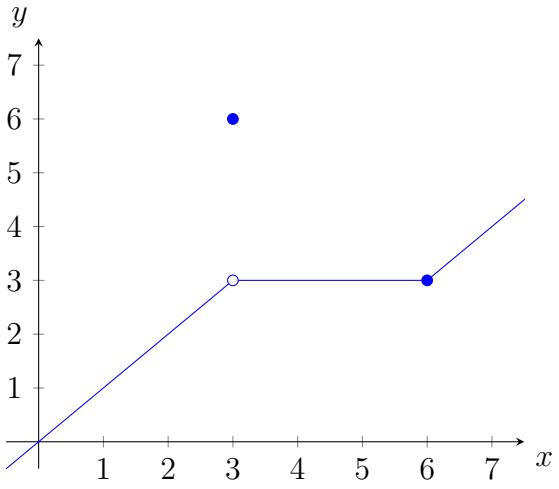
(a) $\lim_{x\to 3} f(x) = 6$

(b) $\lim_{x\to 6} f(x) = 3$

(c) $\lim_{x\to 6} f(x)$ does not exist

(d) $\lim_{x\to 3} f(x)$ does not exist

(e) None of the above



2. The following table records the position of a runner after t seconds.

Time (seconds)	1	2	3	4	5	6	7
Position (meters)	7	12	15	18	23	30	39

Compute the average velocity over the time interval $[3, 7]$. Then estimate the instantaneous velocity at $t = 3$ seconds.

The average velocity over the time interval is

$$V_{av} = \frac{39 - 15}{7 - 3} = \frac{24}{4} = 6 \text{ m/sec}$$

Observe that as we take the average velocity over smaller intervals containing $t = 3$ we have

$$V_{av} = 4 \text{ m/sec over } [3, 5]$$
$$V_{av} = 3 \text{ m/sec over } [3, 4]$$
$$V_{av} = 3 \text{ m/sec over } [2, 3]$$
$$V_{av} = 4 \text{ m/sec over } [1, 3]$$

Based on the information provided in the table, it appears the instantaneous velocity at $t = 3$ is 3 m/sec.