Name: ________________________________  Section: ________________

Clear your desk of everything except pens, pencils and erasers. **Show all your work.**
If you have a question raise your hand and I will come to you.

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1. (1 point) **Multiple Choice. Circle the best answer. No partial credit available**

   If the position (in meters) of a moving object is given by \( p(t) = 2t - t^2 \), for time \( t \) in seconds, then what is the average velocity of the object over the interval \([0, 1] \)?

   A. 0.5 m/s
   B. 1 m/s
   C. 1.5 m/s
   D. 2 m/s
   E. None of the above.

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2. (2 points) **Fill-in-the-Blank.**

   Consider the graph of \( f(x) \) to the right. Evaluate the following, or write “does not exist”.

   (a) \( f(3) = \) __________________________

   (b) \( \lim_{x \to 3^-} f(x) = \) __________________________

   (c) \( \lim_{x \to 3^+} f(x) = \) __________________________

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

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Continue on to back side
3. (1 point) Give an example of a function $f(x)$ for which:
   - $\lim_{x \to 0^-} f(x) = -\infty$
   - $\lim_{x \to 0^+} f(x) = \infty$

Either give a formula for $f(x)$, or sketch a graph (or both).

**Solution:** An easy example would be $f(x) = \frac{1}{x}$.

4. (1 point) **Show your work to receive credit.**

Evaluate $\lim_{x \to 3} \frac{x^2 - 10x + 21}{x - 3}$.

**Solution:**

\[
\lim_{x \to 3} \frac{x^2 - 10x + 21}{x - 3} = \lim_{x \to 3} \frac{(x - 3)(x - 7)}{x - 3} = \lim_{x \to 3} (x - 7) = 3 - 7 = -4
\]