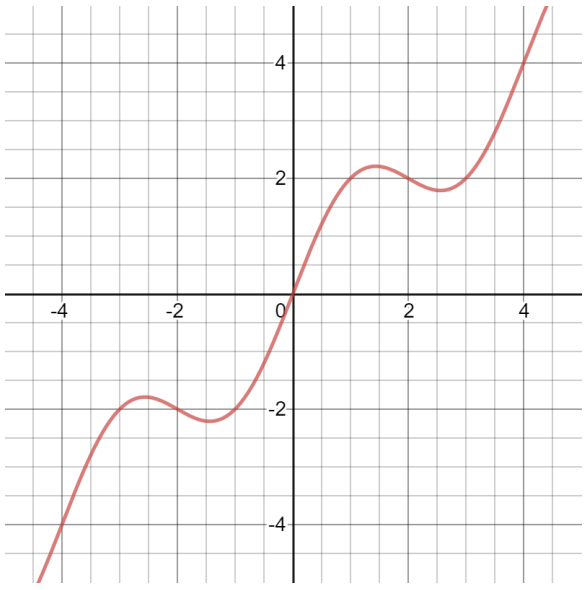
Directions:

- Do only the Checkpoint problems that you need to take and feel ready to take. If you have already earned Mastery on a Learning Target, do not attempt a problem for that Target! You can skip a Target if you need more time to practice with it, and take it on the next round.
- Do not put any work on this form; do all your work on separate pages. You may either handwrite or type up your work.
- Clearly indicate which Learning Target you are attempting at the beginning of its solution; please also turn in solutions for learning targets in order (for example, do not turn in work for F.2 after work for D.1). The easiest way to do this is to put each Learning Target on its own solution page and do not put more than one Learning Target on a single page.
- If you are handwriting, submit your work by **scanning your work** using a scanning app or scanning device; **do not just take a picture** but scan your work to a clear, legible, black and white PDF file of size less than 100 MB. Work submitted as an image file (JPG, PNG, etc.) will not be graded.
- Unless explicitly stated otherwise, you must show your work or explain your reasoning clearly on each item of each problem you do. Responses that consist of only answers with no work shown, or where the work is insufficient or difficult to read, or which have significant gaps or omissions (including parts left blank) will be given a grade of "x".
- Submit your work by uploading it as a PDF or Word file to the appropriate assignment area on Blackboard.
- **Reminder**: Learning Target F.1 is *not* assessed using Checkpoints; you earn Proficiency and Mastery on that Target using the **Functions Bootcamp** assignment.

Learning Target F.2: *I can find the average rate of change of a function on an interval.*

1. Let $f(x) = 5 + \sqrt{x}$. Find the average rate of change in f on the intervals $[1, 5]$ and $[4, 2.01]$.
2. Let $g(x)$ be the graph shown below. Find the average rate of change in g on the intervals $[2, 4]$ and $[-4, 0]$.

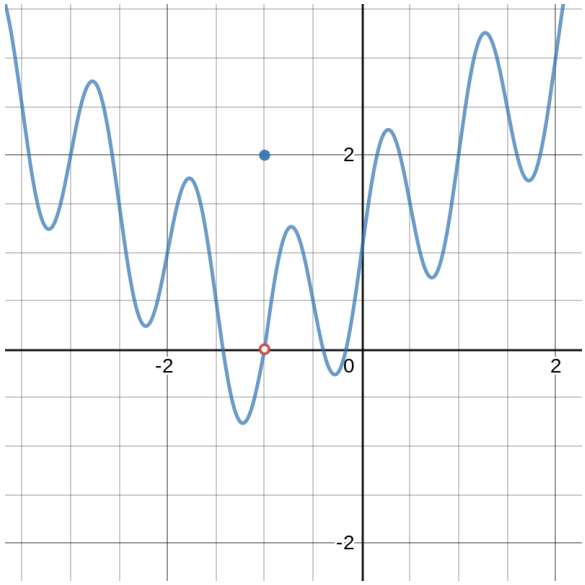


Learning Target L.1 (Core): *I can find the limit of a function at a point using numerical, graphical, and algebraic methods.*

1. Complete the table of values below using the function $f(x) = \dfrac{x^2 - 7x + 10}{x - 5}$. Then state the value of $\lim_{x \to 5} f(x)$ and explain your reasoning.

x	4.5	4.9	4.99	5.01	5.1	5.5
$f(x)$						

2. Using only algebra (no graphs or tables), evaluate $\lim\limits_{x \to 2} \dfrac{x^2 + 2x - 8}{x - 2}$.
3. The function $h(x)$ is shown below. State the value of $\lim\limits_{x \to -1} h(x)$ and explain your reasoning.



Learning Target D.1 (Core): *I can find the derivative of a function, both at a point and as a function, using the definition of the derivative.*

Consider the function $f(x) = 2x^2 - x + 1$.

1. Set up, but do not evaluate, the limit that would compute $f'(1)$ (the derivative of f at the point $x = 1$).
2. Set up, but do not evaluate, the limit that would compute $f'(x)$ (the formula for the derivative of f at any point).
3. Choose one of the limits you set up and evaluate it to find either $f'(1)$ or $f'(x)$.

Learning Target D.2 (Core): *I can use derivative notation correctly, state the units of a derivative, estimate the value of a derivative using difference quotients, and correctly interpret the meaning of a derivative in context.*

A laboratory study investigating the relationship between diet and weight in adult humans found that the weight of a subject, W, in pounds, was a function, $W = f(c)$, of the average number of Calories, c, consumed by the subject in a day.

1. Suppose $f'(2000) = 0$. State the units of the number 2000 and of the number 0. (Clearly indicate which is which.) Then explain your reasoning.
2. Suppose $f(1600) = 165$, $f(1700) = 177$, and $f(1800) = 190$. Use forward, backward, and central differences to estimate $f'(1700)$. Show your work and clearly indicate which estimate technique you are using.

3. Suppose $f'(1500) = -5$. Explain the meaning of this statement in ordinary terms (that is, in terms of calories and weight) and without using technical jargon such as "function", "derivative", "graph", "tangent", or "slope".