1. [9 points]
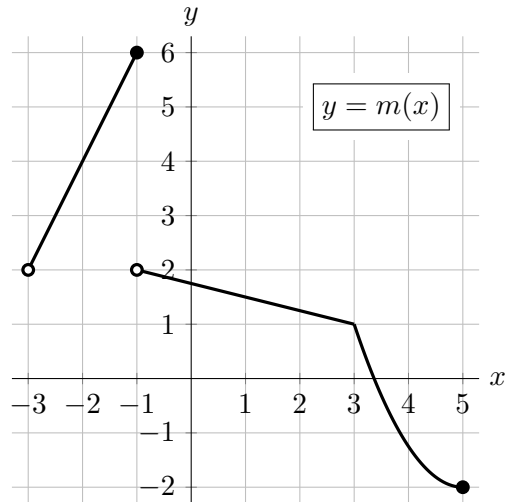
The graph of the function $m(x)$ is shown to the right. Note that:

- $m(x)$ is linear on $(-3, -1]$ and on $(-1, 3]$,

- $m(x)$ is quadratic on $[3, 5]$, and

- there is a corner at $x = 3$.

For parts **a.–d.**, find the **exact** values, or write DNE if the value does not exist. Your answers should not include the letter m but you do not need to simplify.

$y = m(x)$

a. [1 point] Find $m''(1)$.

Answer: $m''(1) = $ _____

b. [2 points] Let $A(x) = \dfrac{m(x)}{x}$. Find $A'(-2)$.

Answer: $A'(-2) = $ _____

c. [2 points] Let $B(x) = m(x)\ln(3x)$. Find $B'(1)$.

Answer: $B'(1) = $ _____

d. [2 points] Let $C(x) = m^{-1}(x)$. Find $C'(1)$.

Answer: $C'(1) = $ _____

e. [2 points] On which of the following intervals does $m(x)$ satisfy the hypotheses of the Mean Value Theorem? Circle all correct answers.

$[-1, 2]$ $\qquad\qquad$ $[0, 5]$ $\qquad\qquad$ $[3, 5]$ $\qquad\qquad$ NONE OF THESE