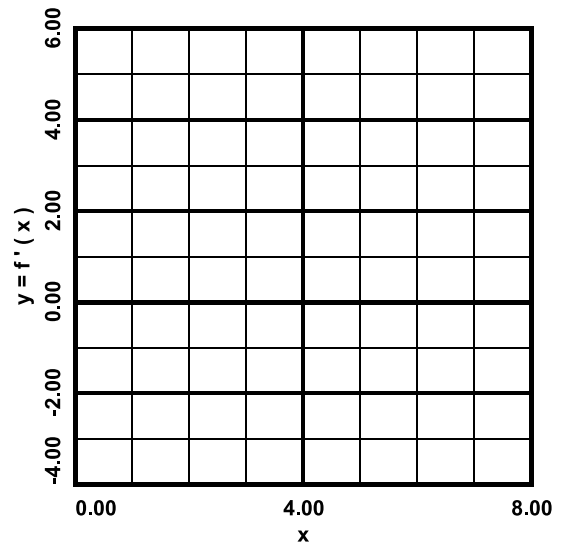
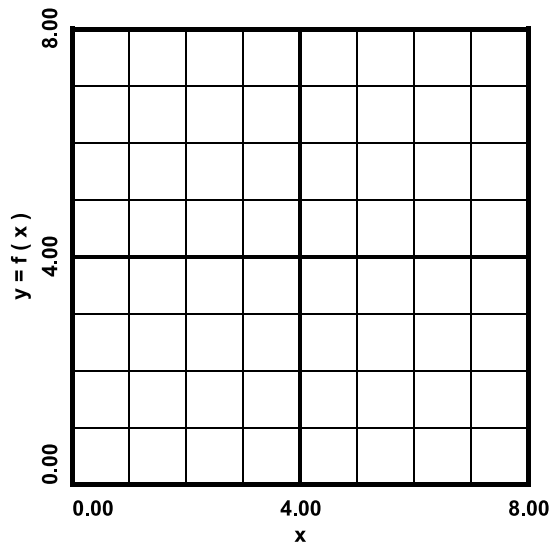


For problems 1 through 3:

- a) Graph  $y = f(x)$  on the grid provided.
- b) State whether or not  $y = f(x)$  is continuous at  $x = 4$ .
- c) Use the (difference quotient) definitions of the derivatives from the left and the right to calculate  $f'(4)$ .
- d) State whether or not  $f'(4)$  exists and why.
- e) Calculate  $f'(x)$  by straightforward differentiation. Also, graph  $y = f'(x)$  on the grid provided.

1)

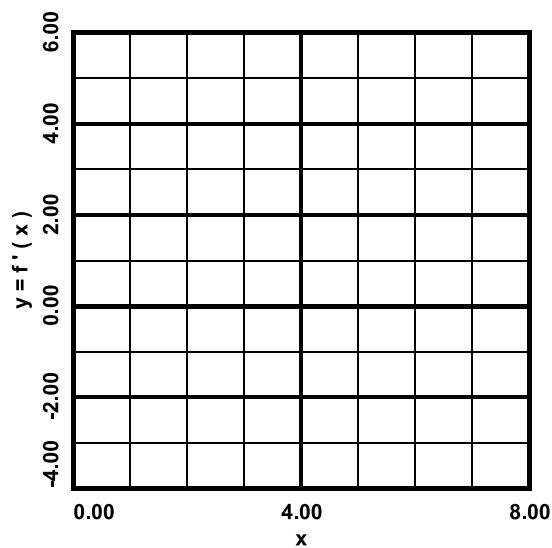
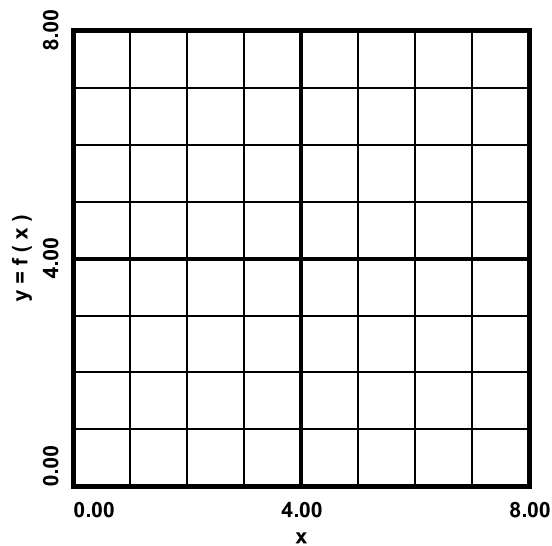
$$f(x) = \begin{cases} -x^2 + 6x - 3 & , \quad -\infty < x \leq 4 \\ -2x + 11 & , \quad 4 < x < \infty \end{cases}$$



## AP CALCULUS AB

2)

$$f(x) = \begin{cases} -x^2 + 6x - 3 & , \quad -\infty < x \leq 4 \\ -\frac{1}{2}x + 7 & , \quad 4 < x < \infty \end{cases}$$



## DIFFERENTIABILITY

3)

$$f(x) = \begin{cases} -x^2 + 6x - 3 & , \quad -\infty < x \leq 4 \\ -2x + 13 & , \quad 4 < x < \infty \end{cases}$$

