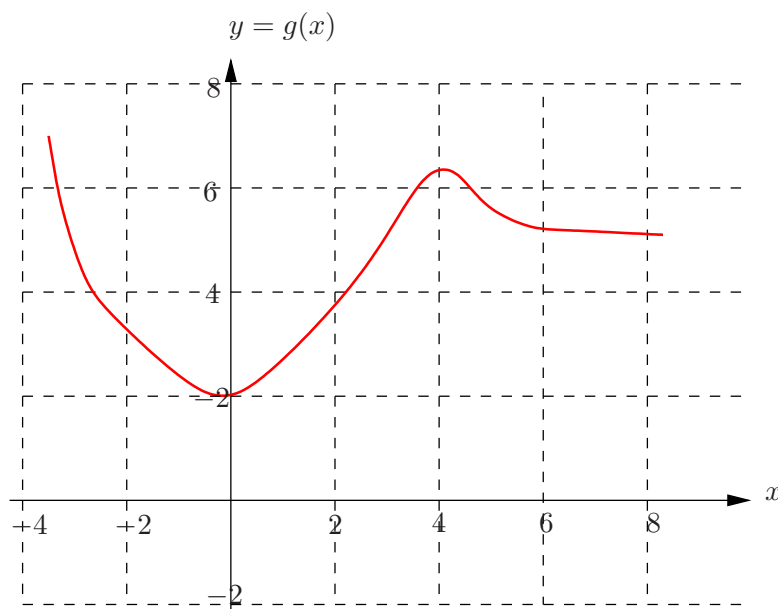


2. (7+2+3 points) (a) On the axes below, sketch a graph of a single, continuous, differentiable **function**, g , with **all** of the following properties.

- $g(0) = 2$
- g' is negative for $x < 0$ and $x > 4$
- g is increasing for $0 < x < 4$
- g'' is positive for $x < 3$
- $g'(4) = 0$
- $g(x) \rightarrow 5$ as $x \rightarrow \infty$



(b) What is $\lim_{x \rightarrow -\infty} g(x)$?

$+\infty$

(c) If $g'(1) = 1/2$, is it possible to have $g'(2) = 1/4$? Explain.

No. Since g is increasing for $0 < x < 4$ and concave up for $x < 3$, if $g'(1) = 1/2$ then $g'(2) > 1/2$.