2. (11 points) Let $f(x)$ be a **continuous** function defined for all real numbers x. Sketch a possible graph of f, given that

   - $f(4) = 2$;
   - $f'(x) > 0$ **and** $f''(x) < 0$ for $x < 2$;
   - $f'(2) = 0$ and $f''(2) = 0$;
   - $f''(x) > 0$ for $2 < x < 4$;
   - $f''(4) = 0$;
   - $f''(x) < 0$ for $x > 4$;
   - $f'(x) > 0$ for $2 < x < 5$;
   - $f'(5) = 0$;
   - $f'(x) < 0$ for $x > 5$.