2. (5 points) The temperature, A, measured in degrees Fahrenheit, of the water near the surface of a small lake t days after the beginning of fall is described by $A = f(t)$.

Explain the meaning of the statement "$f'(30) = -2$".

Solution: *Thirty days after the beginning of fall, the temperature of the water near the surface of the lake is decreasing by about 2 degrees Farenheit per day.*

3. (6 points) A continuous, differentiable function f is defined for $x \geq 0$, and satisfies

- f has exactly one critical point,
- $f(0) = 0$ and $f(3) = 2$,
- $f'(1) = 0$, and
- $\lim_{x \to \infty} f(x) = 0$.

Circle each of the following conditions that are possible.

Solution:

$\boxed{f \text{ has a local maximum at } x = 1.}$

f has a local minimum at $x = 1$.

f has neither a local maximum or a local minimum at $x = 1$.

$\boxed{f \text{ has a global maximum at } x = 1.}$

f has a global minimum at $x = 1$.