

Sketch a graph of the function from the given information.

1)

f is continuous.

$$f(-9) = 4, \quad f(-4) = 5, \quad f(-2) = 2,$$

$$f(0) = 4, \quad f(-6) = 7$$

$$f'(-6) = f'(-2) = 0$$

$$f'(x) > 0 \text{ for } (-\infty, -6) \cup (-2, \infty)$$

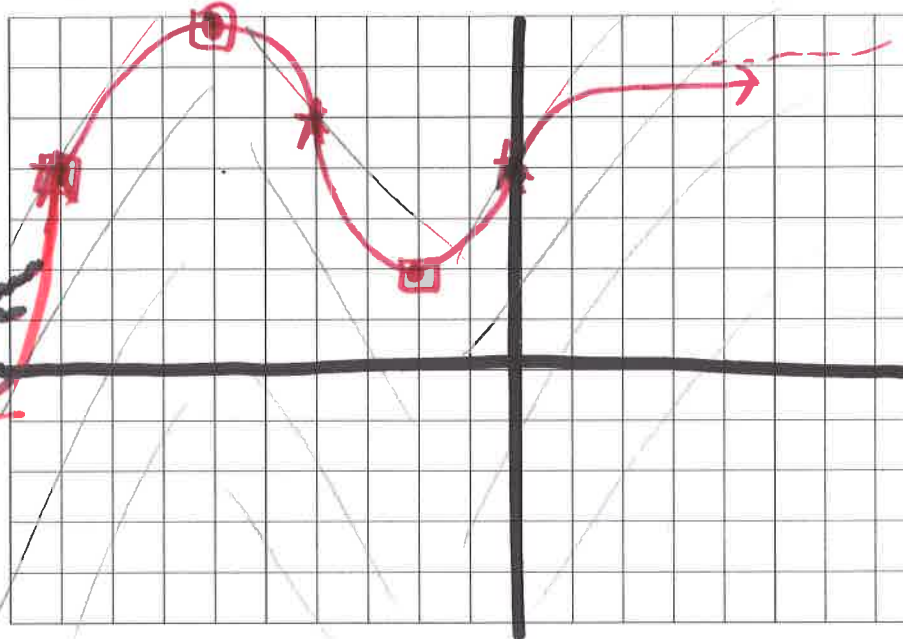
$$f'(x) < 0 \text{ for } (-6, -2)$$

$$f''(-9) = f''(-4) = f''(0) = 0$$

$$f''(x) > 0 \text{ for } (-\infty, -9) \cup (-4, 0)$$

$$f''(x) < 0 \text{ for } (-9, -4) \cup (0, \infty)$$

$$\lim_{x \rightarrow -\infty} f(x) = -1, \quad \lim_{x \rightarrow \infty} f(x) = 6$$



State the extreme values and their type.

Abs. Max - $(-6, 7)$

Rel. Min - $(-2, 2)$

POI: $(-9, 4), (-4, 5), (0, 4)$

2)

$$f(-4) = 6, \quad f(5) = 2, \quad f(-7) = 3,$$

$$f(0) = 2.5, \quad f(-2) = 4$$

$$f'(-4) = 0, \quad f'(2) = \text{undefined}$$

$$f'(x) > 0 \text{ for } (-\infty, -4) \cup (2, \infty)$$

$$f'(x) < 0 \text{ for } (-4, 2)$$

$$f''(-7) = f''(-2) = f''(0) = 0,$$

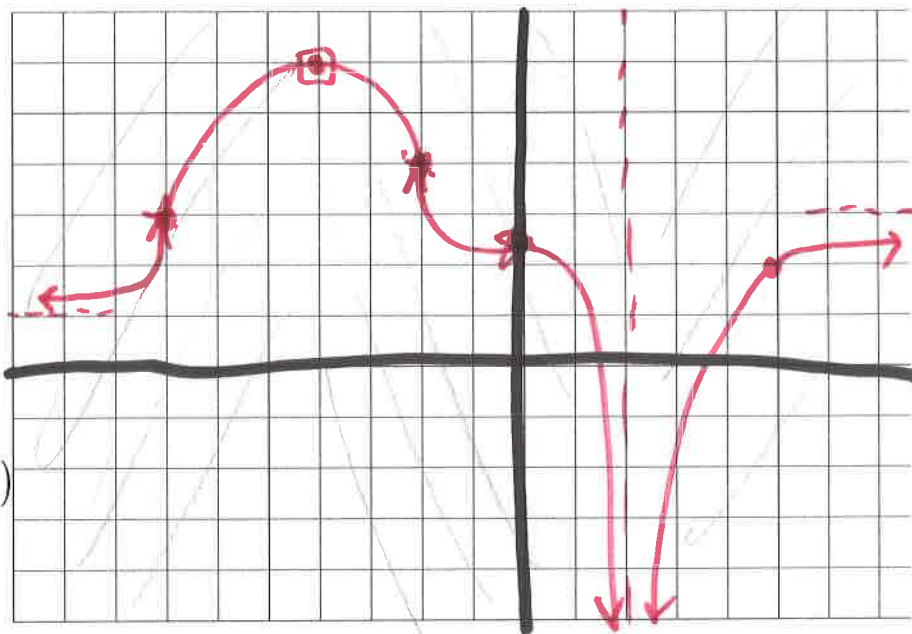
$$f''(2) = \text{undefined}$$

$$f''(x) > 0 \text{ for } (-\infty, -7) \cup (-2, 0)$$

$$f''(x) < 0 \text{ for } (-7, -2) \cup (0, 2) \cup (2, \infty)$$

$$\lim_{x \rightarrow -\infty} f(x) = 1, \quad \lim_{x \rightarrow \infty} f(x) = 3,$$

$$\lim_{x \rightarrow 2^+} f(x) = -\infty, \quad \lim_{x \rightarrow 2^-} f(x) = -\infty$$



State the extreme values and their type.

Abs. Max: $(-4, 6)$

POI: $(-7, 3), (-2, 4), (0, 2.5)$