AP Calculus AB
Criteria Graphing Worksheet #1

Name Key

Sketch a graph of the function from the given information.

1)

f is continuous.

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

x-intercepts $= 0, 6$

$f'(-4) = f'(3) = 0$

$f'(x) > 0$ for $(-\infty, -4] \cup [-4, 3]$ increasing

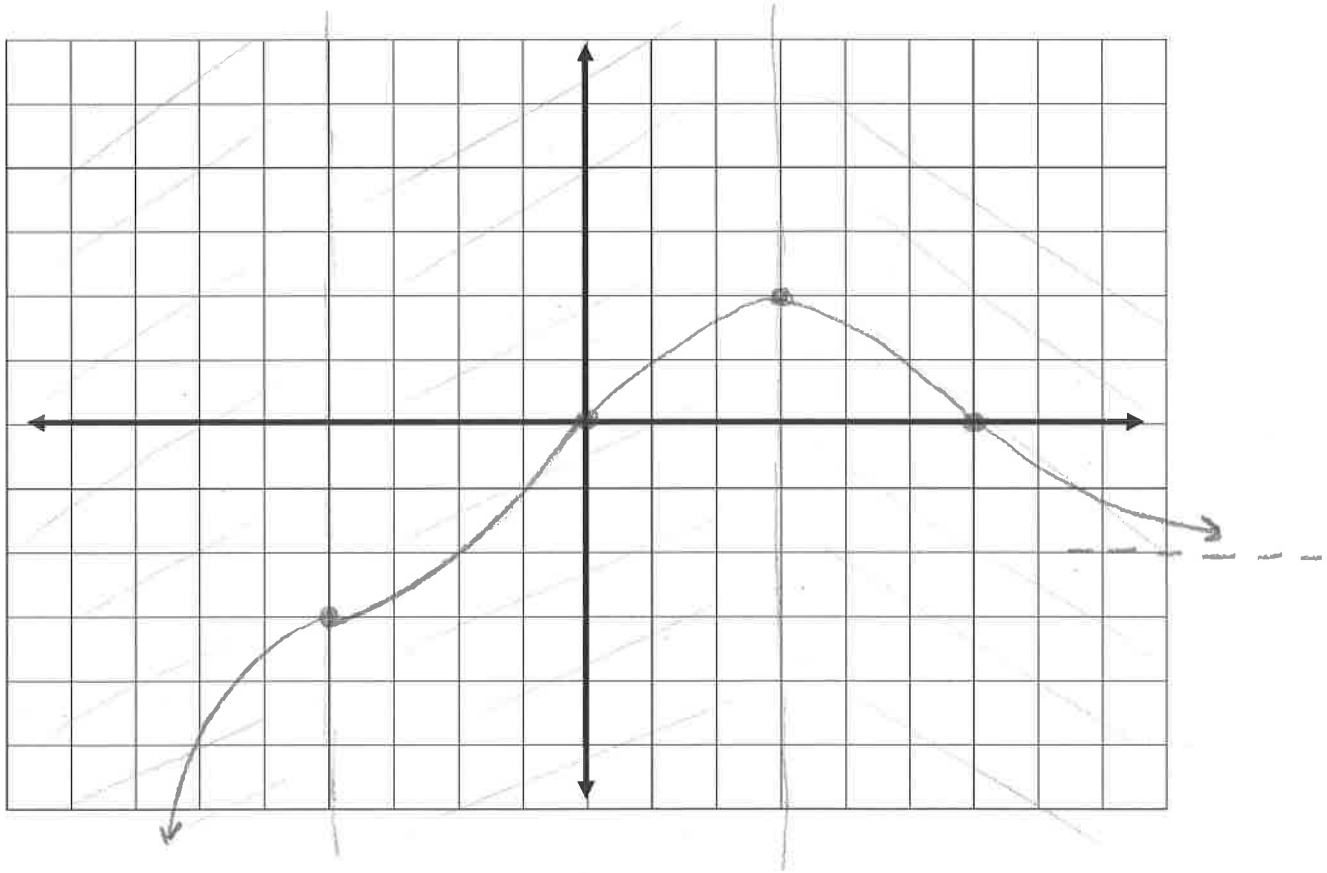
$f'(x) < 0$ for $x \geq 3$ decreasing

$f''(-4) = f''(0) = f''(6) = 0$

$f''(x) < 0$ for $x < -4 \cup (0, 6)$ ∩

$f''(x) > 0$ for $(-4, 0) \cup (6, -\infty)$ ∪

$\lim_{x \to \infty} f(x) = -2$



State the extrema values and their classification.

relative max: (3, 2)
abs. max

2)

$f(-1)=2,\quad f(2)=5,\quad f(5)=0,\quad f(7)=-2$

$f'(2)=f'(7)=0\quad f'(4)=\text{undefined}$

$f'(x)>0$ for $(-\infty,2]\cup[7,\infty)$ inc.

$f'(x)<0$ for $[2,4)\cup(4,7]$ dec

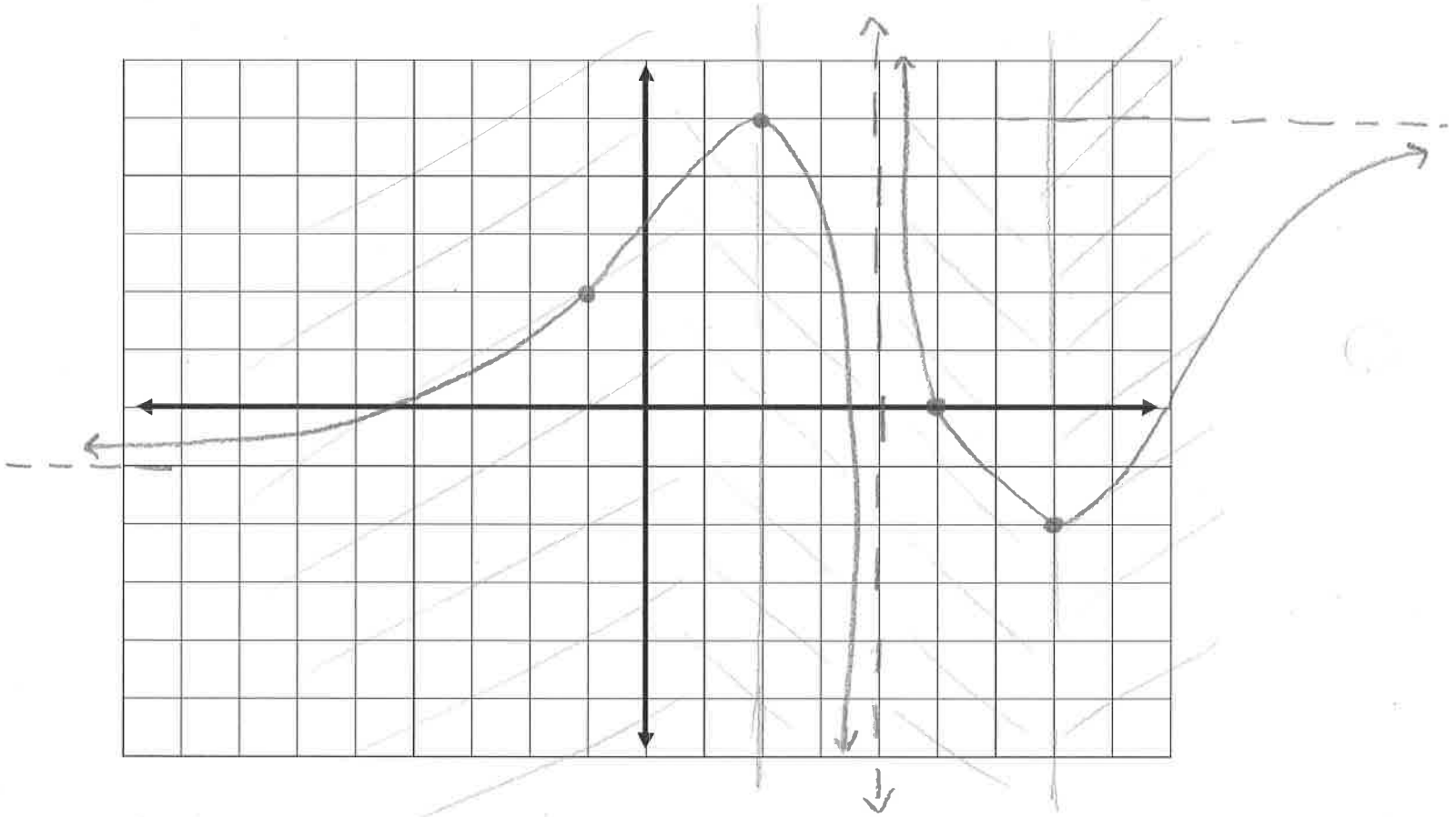
$f''(-1)=f''(9)=0\quad f''(4)=\text{undefined}$

$f''(x)>0$ for $(-\infty,-1)\cup(4,9)$ ↻

$f''(x)<0$ for $(-1,4)\cup(9,-\infty)$ ↶

$\lim_{x\to-\infty} f(x)=-1\quad \lim_{x\to\infty} f(x)=5$

$\lim_{x\to4^-} f(x)=-\infty\quad \lim_{x\to4^+} f(x)=\infty$



State the extrema values and their classification.

relative max: (2, 5)

relative min: (7, -2)