

Calculus

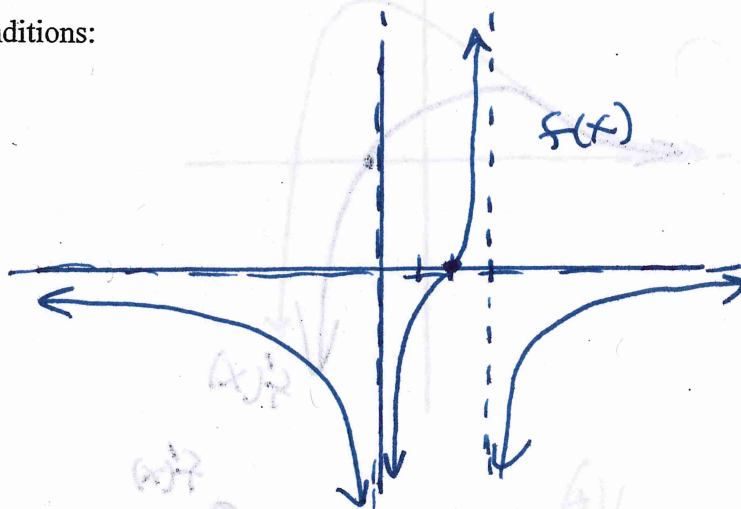
Name Key

Sketch the graph of a function that satisfies the given conditions:

1) $\lim_{x \rightarrow \pm\infty} f(x) = 0$ $\lim_{x \rightarrow 0} f(x) = -\infty$

$f(2) = 0$ $\lim_{x \rightarrow 3^-} f(x) = \infty$

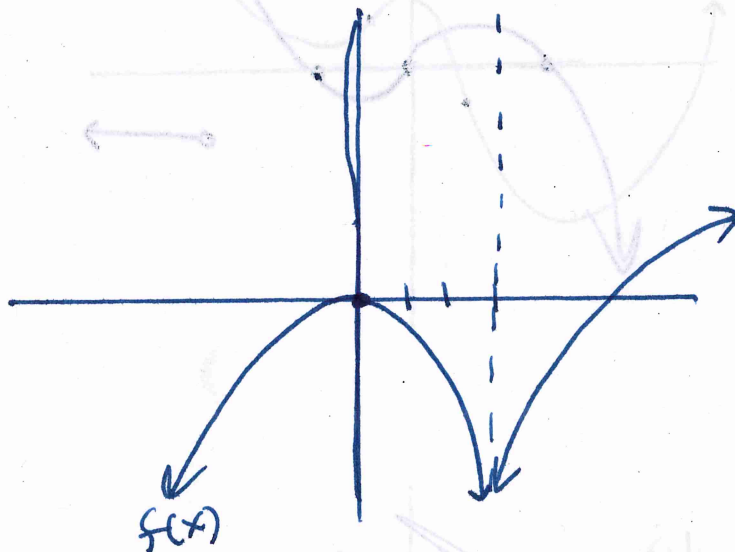
$\lim_{x \rightarrow 3^+} f(x) = -\infty$



2) $\lim_{x \rightarrow 3} f(x) = -\infty$ $f''(x) < 0$ if $x \neq 3$ *con down*

$f'(0) = 0$ *max* $f'(x) > 0$ if $x < 0$ or $x > 3$ *Inc*

$f'(x) < 0$ if $0 < x < 3$ *dec.*



3) $f(0) = 0, f'(-2) = f'(1) = f'(9) = 0$ *max or min*

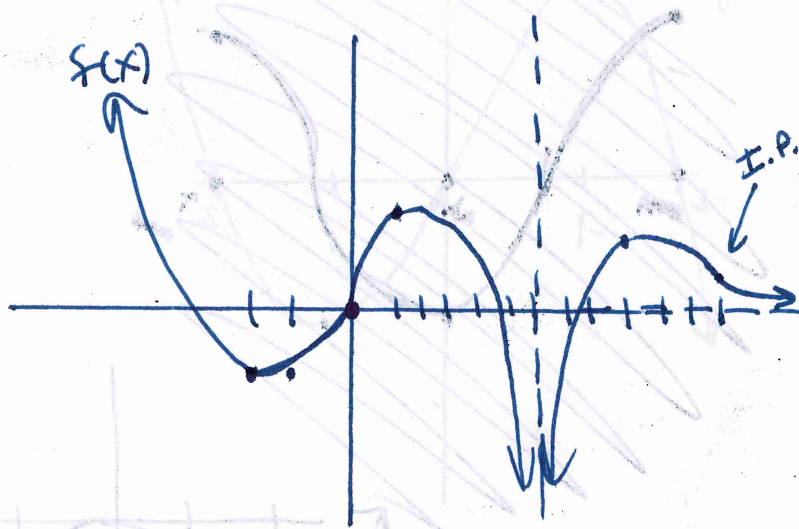
$\lim_{x \rightarrow -\infty} f(x) = 0$ *min* $\lim_{x \rightarrow 6} f(x) = -\infty$ *max*

$f'(x) < 0$ on $(-\infty, -2), (1, 6),$ and $(9, \infty)$ *dec*

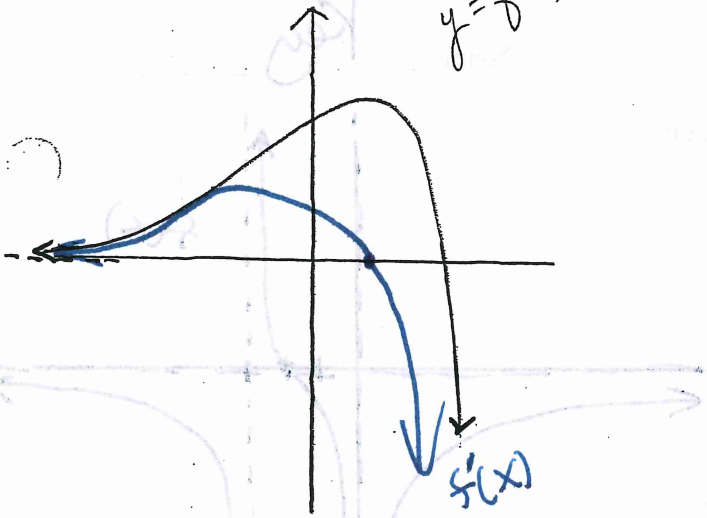
$f'(x) > 0$ on $(-2, 1)$ and $(6, 9)$ *inc*

$f''(x) > 0$ on $(-\infty, 0)$ and $(12, \infty)$ *up*

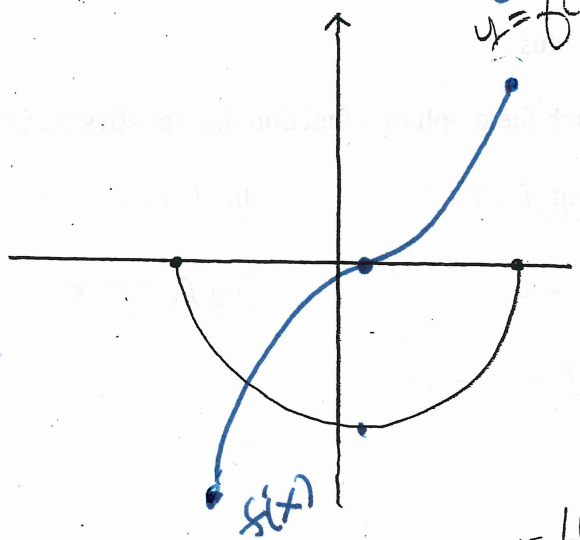
$f''(x) < 0$ on $(0, 6)$ and $(6, 12)$ *down*



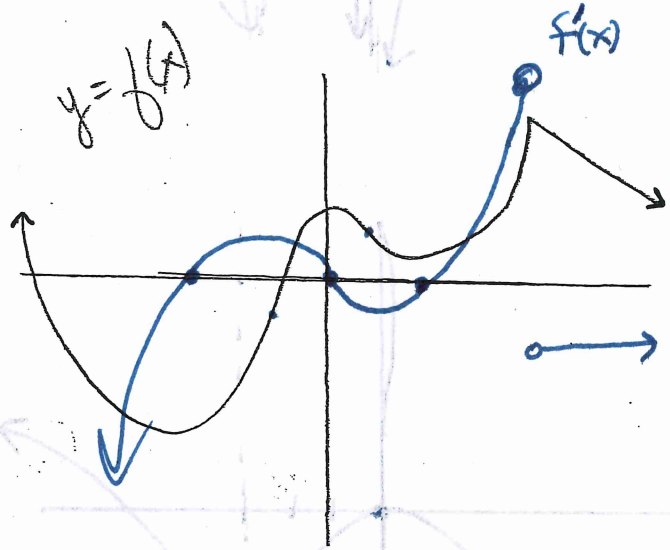
$y = f(x)$



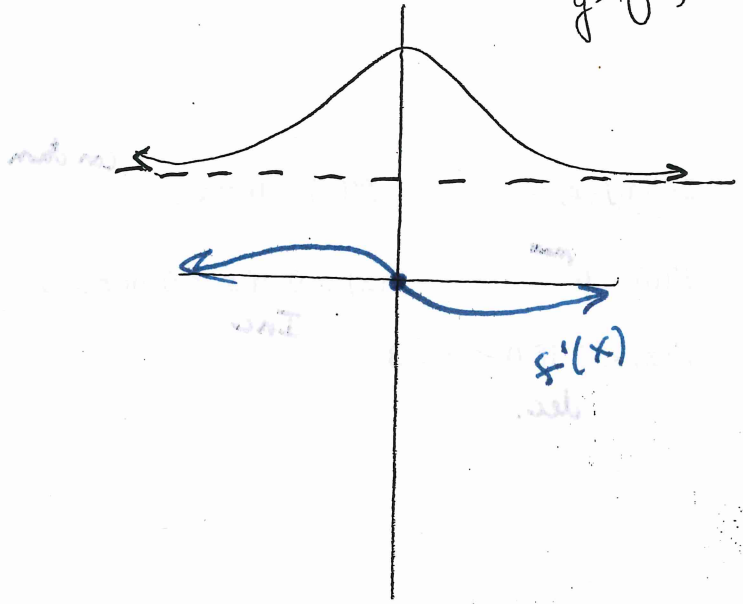
key $y = f(x)$



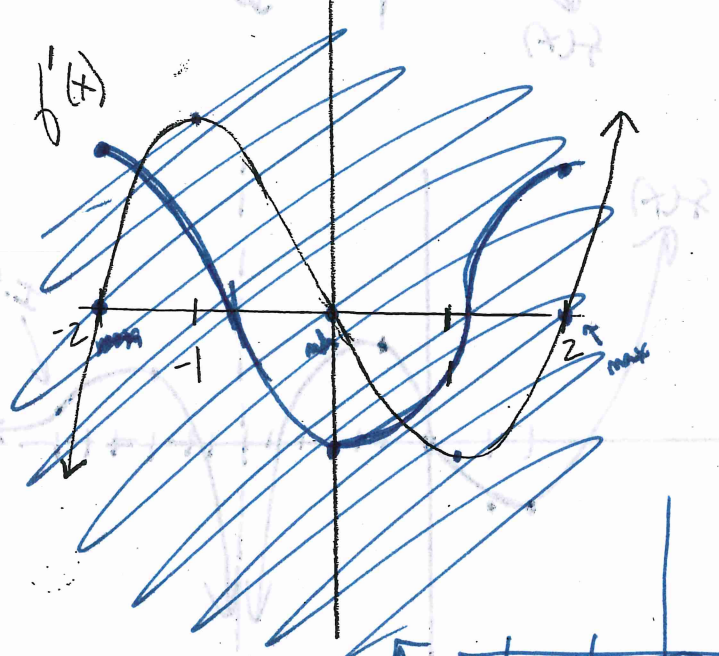
$y = f(x)$



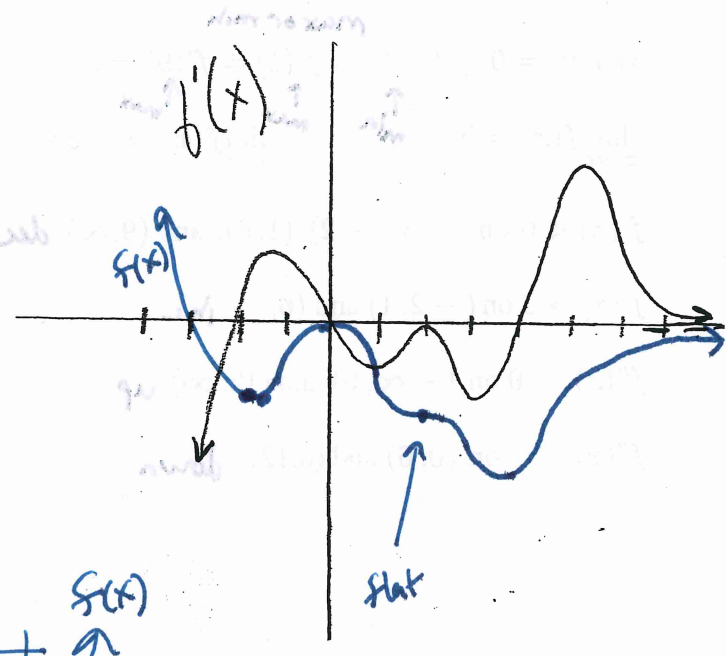
$y = f(x)$



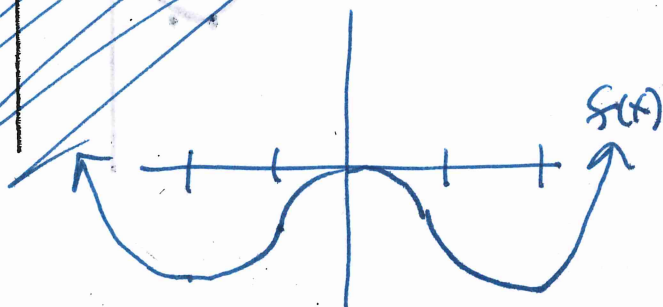
$f'(x)$



$f'(x)$



$f(x)$



flat