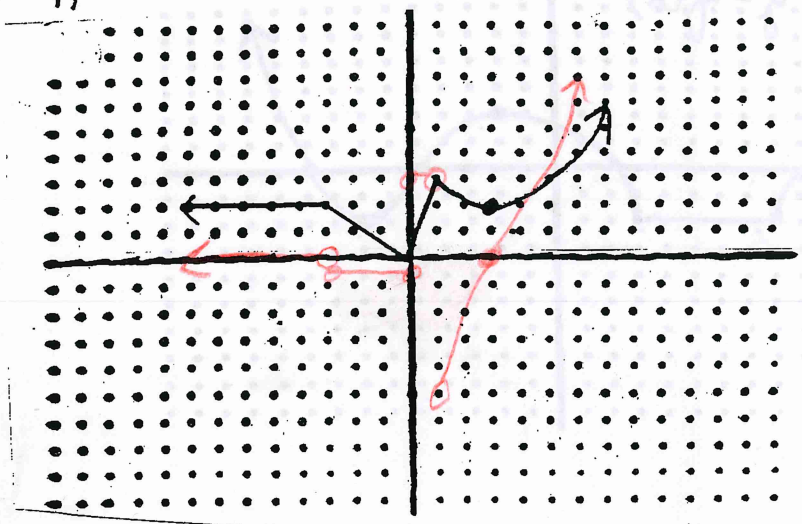
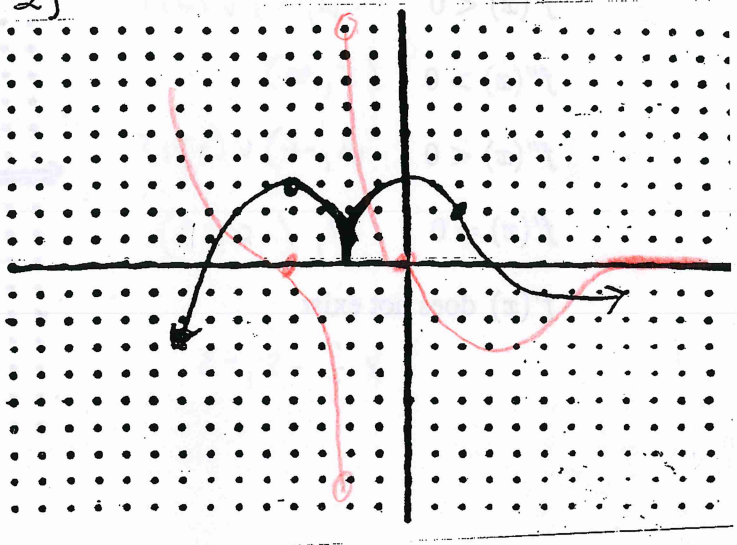
Calculus Name Key

Given the graph of $f(x)$, sketch the graph of $f'(x)$.

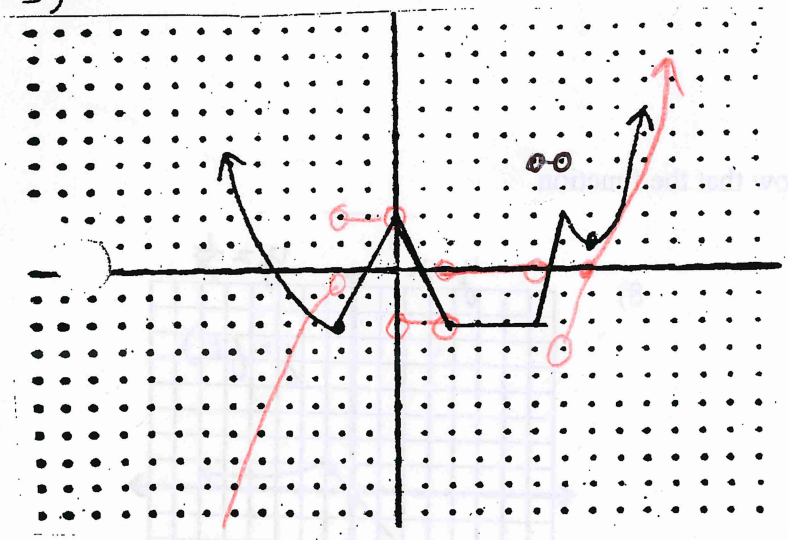
1)



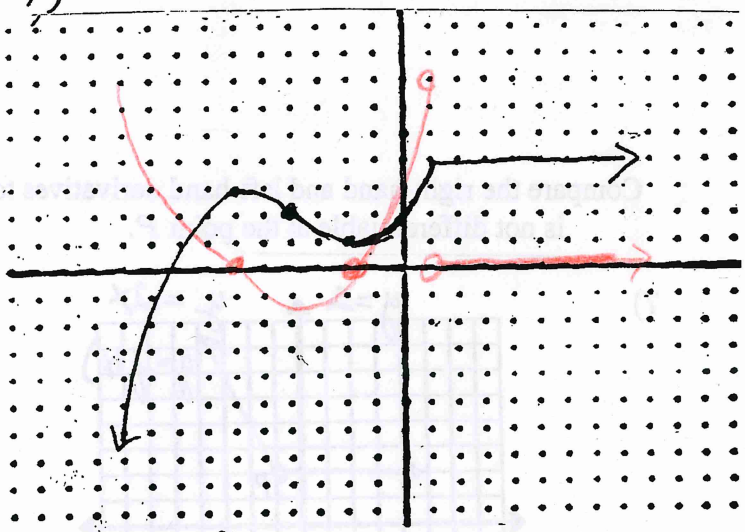
2)



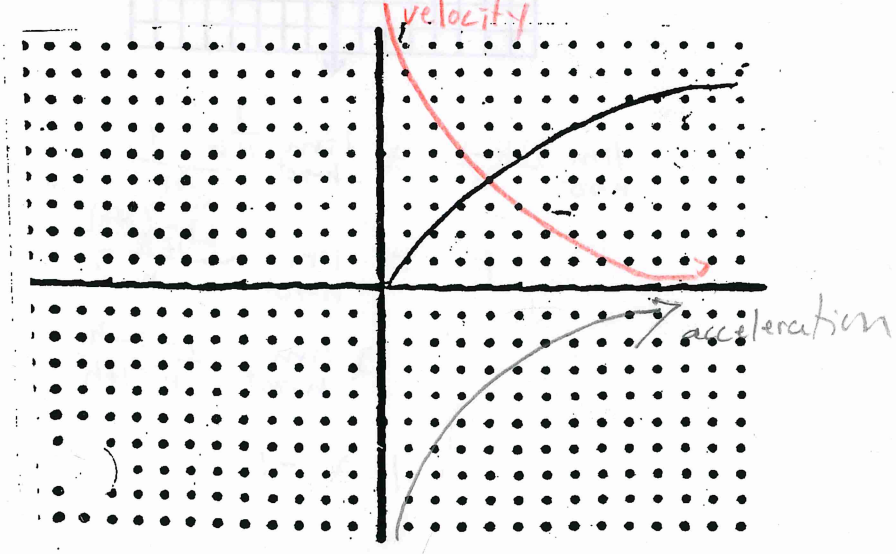
3)



4)



5) Given the position function, graph the velocity and acceleration functions.



Key

6) Use the given graph of $y = f(x)$ to find the values of x where the following statements are true.

$f'(x) > 0$ $(-3, 2) \cup (7, \infty)$

$f'(x) < 0$ $(-\infty, -8) \cup (2, 7)$

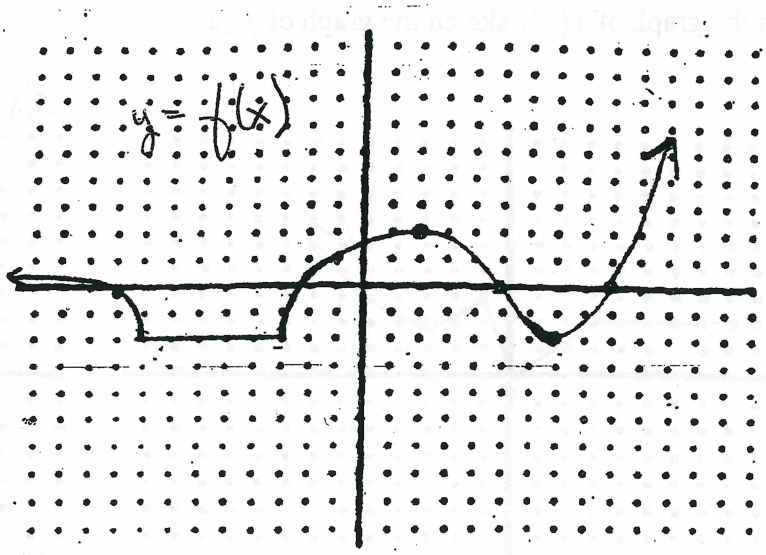
$f''(x) > 0$ $(5, \infty)$

$f''(x) < 0$ $(-\infty, -8) \cup (-3, 5)$

$f'(x) = 0$ $7, (-8, -3)$

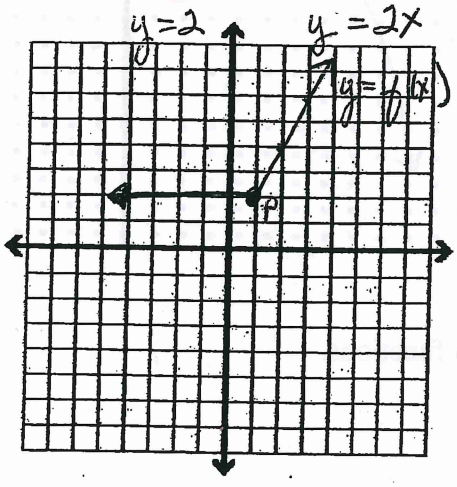
$f'(x)$ does not exist

$x = -8, -3$



Compare the right-hand and left-hand derivatives to show that the function is not differentiable at the point P.

7)

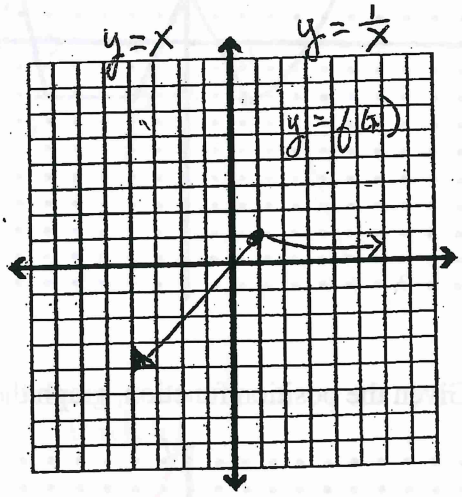


$\lim_{h \to 0^-} \frac{2 - 2}{h} \neq \lim_{h \to 0^+} \frac{2(1+h) - 2}{h}$

$0 \neq \lim_{h \to 0} \frac{2+2h-2}{h}$

$0 \neq 2$

8)



$\lim_{h \to 0^-} \frac{1+h-1}{h} \neq \lim_{h \to 0^+} \frac{\frac{1}{1+h} - 1}{h}$

$\lim_{h \to 0} 1 \neq \lim_{h \to 0^+} \frac{\frac{1-(1+h)}{1+h}}{h}$

$\neq \lim_{h \to 0^+} \frac{1-1-h}{h(1+h)}$

$1 \neq -1$