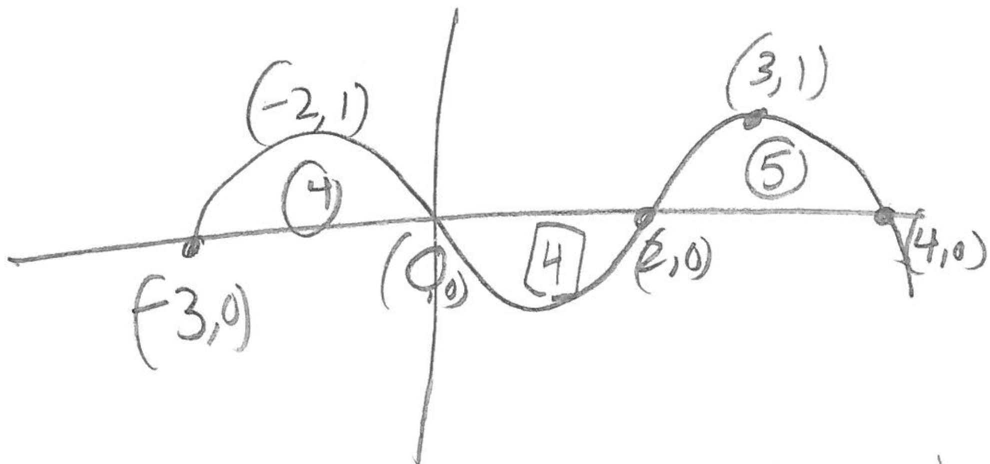
Motion Open Response



$f(0)=8$

f' graph

A) Relative Max for f

B) Relative min for f

C) inflection points for f

d) f(2)

e) f(4)

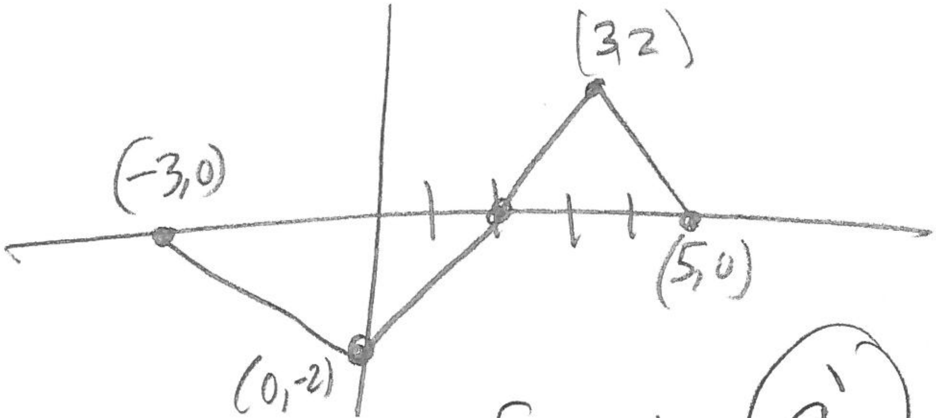
f) f(-3)

g) Where is f increasing ______

f decreasing ______

f concave up and increasing ______

Type 2



f graph $= g'$

$$g(x) = \int_2^x f(t)\,dt$$

$g(2)$ $g(5)$ $g(0)$ $g(-3)$

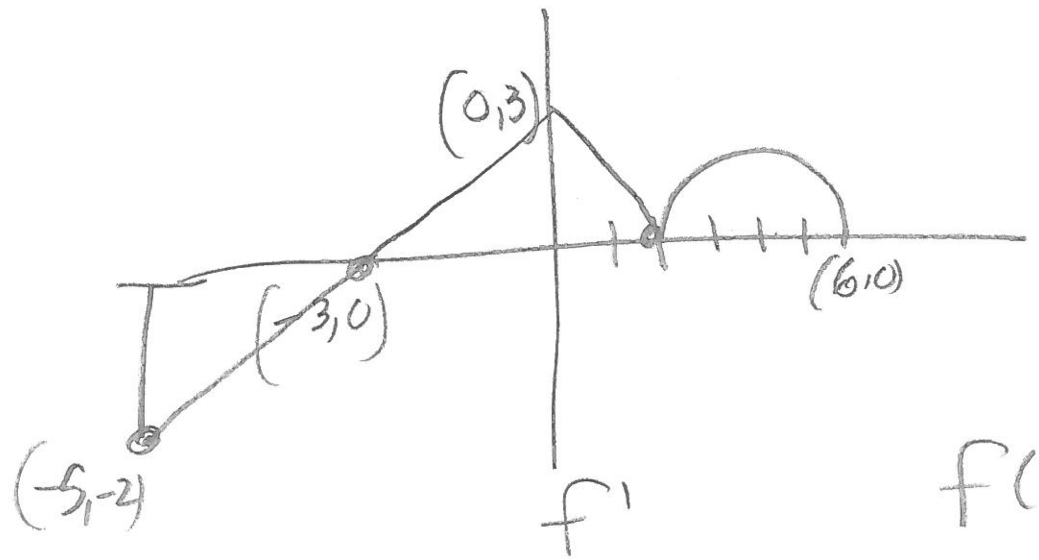
$g'(-3)$ $g'(0)$ $g'(3)$ $g''(3)$ $g''(4)$

relative max for g →

Absolute max for g

Absolute min for g

Type 3



$f(2) = 8$

$f(6)$ $f(2)$ $f(0)$

$f(-3)$ $f(-5)$ $f''(0)$

$f''(-3)$ absolute for f

Max ________

Min ________

Solutions

Motion Open Response

A) Relative max for f $\underline{x=0, x=4}$ where f' goes from positive to negative

B) Rel min for f $\underline{x=2}$ where f' goes from neg to pos

C) inflection points for f $\underline{x=-2 \quad x=1 \quad x=3}$ where f' changes direction

d) $f(2) = f(0)=8$

$8+\text{area} \quad 8-4=4$

e) $f(4) = 8-4+5=9$

f) $f(-3) = 8+4-4=\boxed{0}$ remember neg area is positive when you go backwards

g) $f\uparrow$ $\underline{(-3 \text{ to } 0) \cup (2,4)}$ where f' is positive

$f\downarrow$ $\underline{(0,2)}$ where f' is negative

f concave up and $\uparrow$ $\underline{(-3,-2) \cup (2,3)}$ where f' is pos and increasing

Type 2 Solutions

$$g(x) = \int_{2}^{x} f(t)\,dt$$

we start at $x = 2$

$g(2) = 0$ since $\int_2^2 = 0$

$g(5) = 3$ since area is positive 3 triangle

$g(0) = 2$ area is neg 2 but going backwards turns positive

$g(-3) = 5$

$g'(-3) =$ look at point $\boxed{0}$ since we have g' graph

$g'(0) = -2$

$g'(3) = 2$

$g''(3) =$ dne (corner)

$g''(4) =$ find slope -1

Type 3

$f(2)=8$ so start point $(2,8)$

$f(6) = 8 + \text{area}$ semi-circle $r=2$

$\pi r^2 = 4\pi$ take half

$8+2\pi$

$f(2) = 8$

$f(-3) = 8 -$ area triangle (we are going backwards so negative area is positive!

$8 - 7.5 = .5$

$f(-5) = 8 - 7.5 + 2 = \boxed{2.5}$

$f''(0) =$ dne corner

$f''(3) =$ find slope -1

abs max for f → largest value $8+2\pi$

min for f → lowest value $8 - 7.5 = .5$