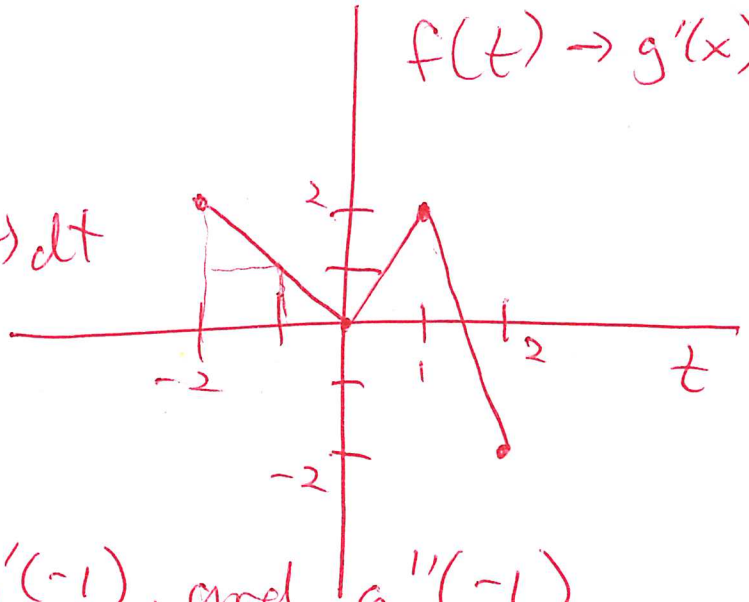
4-1 Obj:

to find stuff from integral functions.

Let $g(x) = \int_0^x f(t)\,dt$



(a) Find $g(-1)$, $g'(-1)$, and $g''(-1)$.

$g(-1) = \int_0^{-1} f(t)\,dt$ → area from 0 to -1

$= -\int_{-1}^{0} f(t)\,dt$

$g(-1) = \boxed{-\frac{1}{2}}$

$g'(-1) = \frac{d}{dx}\int_0^x f(t)\,dt$ FTC #2

$= f(x)\big|_{x=-1}$ $g'(x) = f(x)$

$= f(-1)$

$\boxed{g'(-1) = 1}$

If $g'(x) = f(x)$
then $g''(x) = f'(x)$.

$g''(-1) = f'(-1)$ → slope of f at $x = -1$

$\boxed{g''(-1) = -1}$

(b) Where is $g(x)$ increasing?

$g'(x)$ is positive
$f(x)$ is positive

$\therefore \boxed{-2 < x < 1.5}$

(c) What are the Pts of inflection of $g(x)$?

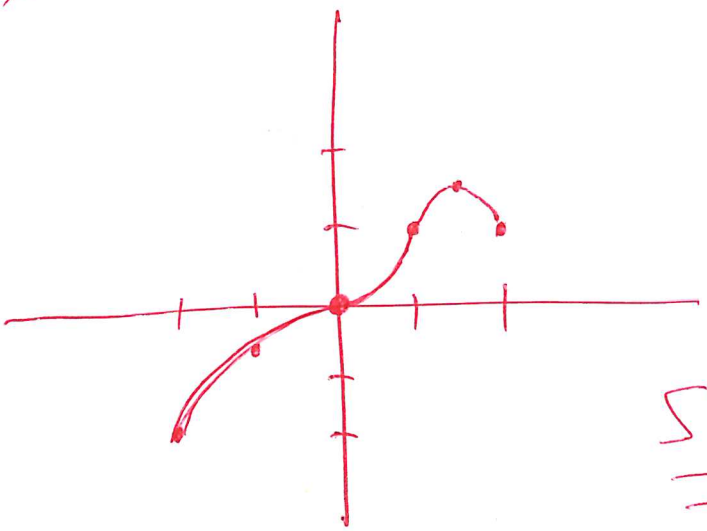
rel max or min of $g'(x)$
rel max or min of $f(x)$

$\therefore \boxed{x = 0 \text{ and } 1}$

(d) Graph $g(x)$ on $[-2, 2]$.

$g(x) = \int_0^x f(t)\,dt$

$g(0) = 0$



SO EZ!

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