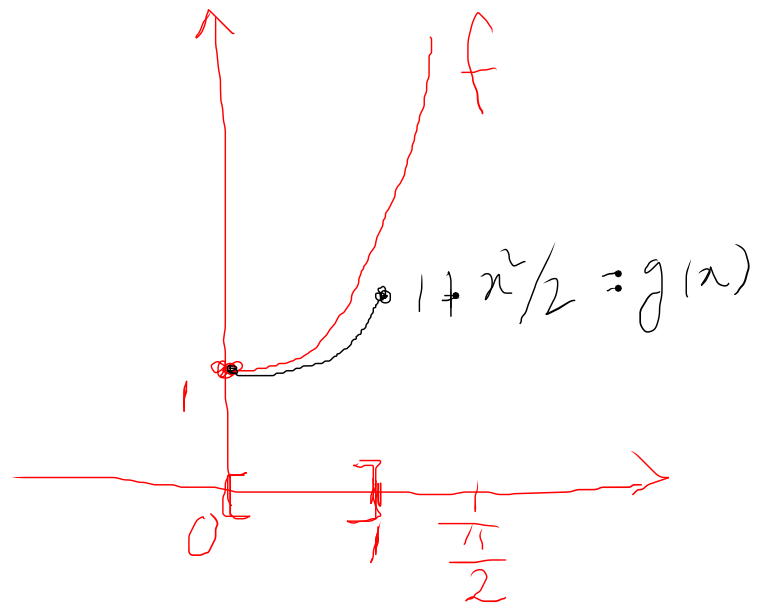


$$7. f(x) \geq g(x) \text{ on } [0, 1]$$

$$\Rightarrow \int_0^1 f(x) dx \geq \int_0^1 g(x) dx$$

$$\int_0^1 \sec x dx \geq \int_0^1 \left(1 + \frac{x^2}{2}\right) dx$$

Compute it!



This was a hint on 5.3.80

$$\textcircled{3} \quad g(x) = \frac{1}{a} \int_0^x f(t) \sin a(x-t) dt$$

$$\int_0^x f(t) (\sin ax \cos at - \cos ax \sin at) dt \quad \text{by Hint}$$

$$= \frac{\sin ax}{a} \underbrace{\int_0^x f(t) \cos at dt}_{h(x)} - \cos ax \underbrace{\int_0^x f(t) \sin at dt}_{g(x)}$$

product rule and FTC part I.

... Finish it!