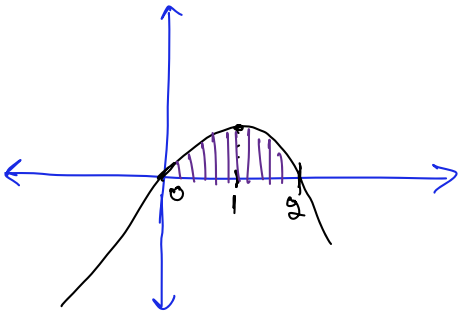
Name: [1 pt]

Problem 1. Find the area bounded by the curve $y = 4x - 2x^2$ and the x-axis. [5 pts]

$y = 4x - 2x^2 = 2x(2-x)$



$\Rightarrow A = \int_0^2 (4x - 2x^2)\, dx$

$= \left(4\frac{x^2}{2} - 2\frac{x^3}{3}\right)\Big|_0^2$

$= 4 \cdot \frac{2^2}{2} - 2 \cdot \frac{2^3}{3} = 8 - \frac{16}{3} = \frac{8}{3}$

Problem 2. Evaluate the indefinite integral $\int \sqrt{1-x}\, dx$. [5 pts]

Let $u = 1-x \Rightarrow du = -dx \Rightarrow -du = dx$

$\Rightarrow \int \sqrt{1-x}\, dx = \int \sqrt{u} \cdot (-du) = -\int \sqrt{u}\, du$

$= -\frac{u^{\frac{1}{2}+1}}{\frac{1}{2}+1} + C = -\frac{2}{3} u^{\frac{3}{2}} + C$

$= -\frac{2}{3}(1-x)^{\frac{3}{2}} + C$