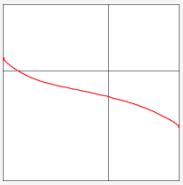
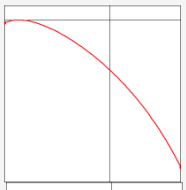
Problem 1.

Which of the following is the graph of an antiderivative of $f(x)$, shown below?

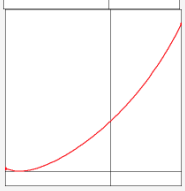
$f(x)$:



○ **A.**



○ **B.**



Problem 2. *If* $f''(x) = \cos x$, $f'(\pi/2) = 10$, *and* $f(\pi/2) = 14$, *then determine* $f(x)$ *and* $f'(x)$.

Problem 3. *Let* $f(x) = \int_0^{x^3} e^{-t^2}\, dt$. *Find* $f'(1)$.

Problem 4.

a) Find $\int \frac{\ln x}{x}\, dx$.

b) Find $\int \frac{x}{x+2}\, dx$.