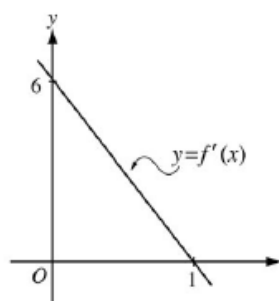


$$\int f'(x)dx = f(x), \frac{d}{dx} \int f(x)dx = f(x), \int_a^b f'(x)dx = f(b) - f(a)$$

1.

A pizza, heated to a temperature of 350 degrees Fahrenheit ($^{\circ}\text{F}$) is taken out of an oven and placed in a 75°F room at time $t = 0$ minutes. The temperature of the pizza is changing at a rate of $-110e^{-0.4t}$ degrees Fahrenheit per minute. To the nearest degree, what is the temperature of the pizza at time $t = 5$ minutes?

2.



The graph of f' , the derivative of f , is the line shown in the figure above. If $f(0) = 5$, then $f(1) =$

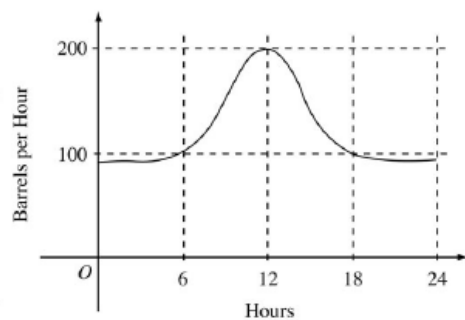
3.

Let $f(x) = \int_{-2}^{x^2-3x} e^{t^2} dt$. At what value of x is $f(x)$ a minimum?

- (A) For no value of x (B) $\frac{1}{2}$ (C) $\frac{3}{2}$ (D) 2 (E) 3

$$\int f'(x)dx = f(x), \frac{d}{dx} \int f(x)dx = f(x), \int_a^b f'(x)dx = f(b) - f(a)$$

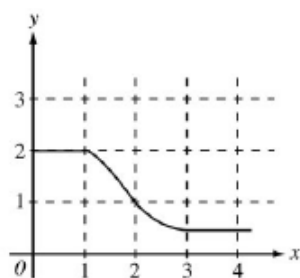
4.



The flow of oil, in barrels per hour, through a pipeline on July 9 is given by the graph shown above. Of the following, which best approximates the total number of barrels of oil that passed through the pipeline that day?

- (A) 500 (B) 600 (C) 2,400 (D) 3,000 (E) 4,800

5.



The graph of f is shown in the figure above. If $\int_1^3 f(x)dx = 2.3$ and $F'(x) = f(x)$, then $F(3) - F(0) =$

$$\int f'(x)dx = f(x), \frac{d}{dx} \int f(x)dx = f(x), \int_a^b f'(x)dx = f(b) - f(a)$$

6.

The rate at which people enter an amusement park on a given day is modeled by the function E defined by

$$E(t) = \frac{15600}{(t^2 - 24t + 160)}.$$

The rate at which people leave the same amusement park on the same day is modeled by the function L defined by

$$L(t) = \frac{9890}{(t^2 - 38t + 370)}.$$

Both $E(t)$ and $L(t)$ are measured in people per hour, and time t is measured in hours after midnight. These functions are valid for $9 \leq t \leq 23$, the hours during which the park is open. At time $t = 9$ there are no people in the park.

(a) How many people have entered the park by 5:00 P.M. ($t = 17$)? Round answer to the nearest whole number.

(c) Let $H(t) = \int_9^t (E(x) - L(x))dx$ for $9 \leq t \leq 23$. The value of $H(17)$ to the nearest whole number is 3725. Find the value of $H'(17)$ and explain the meaning of $H(17)$ and $H'(17)$ in the context of the park.