Due at 6:00 pm on Thursday, February 11

You may work on this assignment with your classmates or anybody else you please. You may get help from a tutor or even the instructor. What you may not do is simply copy somebody else’s work – that completely obviates the purpose of the assignment. If you forget to complete the assignment before it is due, do not simply copy someone else’s paper and turn that in … that is not “working together,” that is taking credit for somebody else’s work.

1. Answer each question on this page in reference to the function \( f \) shown in Figure 1; you may simply supply the requested values in the provided blanks – no explanations necessary. The “areas” of the three shaded regions are, from left to right, 4, 8, and 3.5. Assume that \( F \) is in reference to the specific antiderivative of \( f \) that passes through the point \( (3, -8) \); i.e., \( F(3) = -8 \)

a. \( F(5) = \) 

b. \( F(0) = \) 

c. \( \int_{3}^{5} f(x) \, dx = \) 

d. \( \int_{0}^{-2} f(x) \, dx = \) 

e. \( \int_{-1}^{0} f(2x) \, dx = \) 

f. If \( g(t) = \int_{5}^{t} f(x) \, dx \), then \( g(0) = \) 

g. Circle each of the following that must have a negative value.

\[
\begin{align*}
\int_{-2}^{5} f(x) \, dx & \quad & \int_{-2}^{5} F(x) \, dx & \quad & \int_{-2}^{5} f'(x) \, dx \\
\int_{5}^{-2} f(x) \, dx & \quad & \int_{5}^{-2} F(x) \, dx & \quad & \int_{5}^{-2} f'(x) \, dx \\
\end{align*}
\]
2. Two different functions, both called $f'$, are shown below. For each function, do the following.
   
a. Use “areas” to determine the value of the integral that is stated in the figure caption. \textit{Include units while making the calculation.}
   
b. Write a description of what the integral value tells you.

Figure 2: $\int_0^7 f'(t) \, dt$

Figure 3: $\int_1^6 f'(t) \, dt$