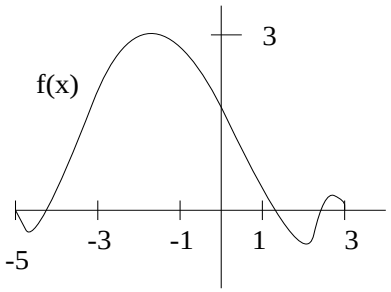
Section 5.3
The Definite Integral as Area

1. Using the figure below, decide whether each of the following definite integrals is positive or negative.

   (a) $\int_{-5}^{-4} f(x)dx$ (b) $\int_{-4}^{1} f(x)dx$
   (c) $\int_{1}^{3} f(x)dx$ (d) $\int_{-5}^{3} f(x)dx$



2. America Online's total revenue (including revenue from subscriptions) was flowing in at a rate of approximately $R_t = 0.4t^2 + 0.1t + 2$ where $0 \leq t \leq 2.5$ billion dollars per year, where t is time in years since January 1997. During the same period, revenue from subscriptions alone flowed in at a rate of approximately $R_s = 0.2t^2 + 0.2t + 1$ where $0 \leq t \leq 2.5$ billion dollars per year.

   Find the area between the graphs of R_t and R_s over the interval $[0, 1]$. Interpret your answer.

3. a. Use the figure below to find $\int_{-3}^{0} f(x)dx$.

   c. Use the figure below to find $\int_{-4}^{1} f(x)dx$.

   b. If the area of the shaded region is A, find $\int_{-3}^{4} f(x)dx$