1. Evaluate the following definite integrals:

   (a) \[ \int_{-1}^{1} \frac{1}{x + 2} \, dx \]

   (b) \[ \int_{0}^{\pi/4} -2 \sec^2(x) \, dx \]

   (c) \[ \int_{0}^{x} \frac{1}{\sqrt{4 - t^2}} \, dt. \]

2. Use Liebniz’ rule to evaluate the following:

   (a) \[ \frac{d}{dx} \int_{0.01}^{x} \ln(\sin(s)) \, ds, \quad 0.01 \leq x < \pi \]

   (b) \[ \frac{d}{dx} \int_{\ln(x)}^{x} e^{-t^2} \, dt \]
(c) \frac{d}{dx} \int_{-x}^{0} \cos(\theta) \sin(\theta) \, d\theta

3. Evaluate the following integrals:

(a) \int_{-r}^{r} \sqrt{r^2 - x^2} \, dx

(b) \int_{0}^{5} \frac{x^2 - 5x + 6}{|x - 2|} \, dx

(Hint: Consider the geometry of the integrals!)

4. Determine the area below the curve

\[ f(x) = \begin{cases} 
  x + 4, & \text{for } -4 \leq x < -1 \\
  -3(x + 1)^2 + 3, & \text{for } -1 \leq x < 0 \\
  x^{1/2}, & \text{for } 0 \leq x \leq 4
\]

over the domain \(-4 \leq x \leq 4\).

5. Calculate the area of the closed region bound by the curves \(\sin(x)\) and \(\cos(x)\) over the interval \(0 \leq x \leq 2\pi\).

6. Joe is driving at a speed of 18 m/s on a country road when a deer darts out in front of him. He begins immediately applying a constant deceleration of 4 m/s\(^2\). Based on what you know about the relationship between position, velocity, and acceleration, determine whether Joe hits the deer or not, given that the deer is 50 meters away when he starts slowing down.