1. A particle moves in a straight line for 10 seconds. The graph shown gives the particle's velocity as a function of time.

(a) Is the particle always moving forward?
(b) Estimate the total distance traveled by the particle.

2. A particle moves along the x-axis, and its acceleration in m/s^2 is given by the function \( a(t) = 2t + 5 \), where \( t \) measures time in seconds. At time \( t = 0 \), the particle is at \( x = 3 \), and at time \( t = 3 \), the particle is moving to the right at 6 m/s. What is the particle's position at time \( t = 2 \)?

3. Find the area of the region bounded by the curves \( y = x - 1 \) and \( y^2 = 2x + 6 \).

4. Compute the following.

(a) \( \int x^2 e^{x^3+5} \, dx \)
(b) \( \int_{\frac{1}{2}}^{1} \frac{1}{\sqrt{1-x^2}} \, dx \)
(c) \( \int \frac{5x}{3-x^2} \, dx \)
(d) \( \int \frac{5x}{\sqrt{3-x}} \, dx \)
(e) \( \int e^{x^{10}} \ln(x) \, dx \)

5. Find the derivative of \( f(x) = x \ln(x) \). Use this to guess the antiderivative of \( \ln(x) \).