1. Evaluate the following integrals:

(a) 
$$\int (2x+3) \ dx$$

(b) 
$$\int (3x-1)^{234} dx$$

(c) 
$$\int \sqrt{2+5y} \, dy$$

(d) 
$$\int \frac{3r \, dr}{\sqrt{1-r^2}}$$

(e) 
$$\int t^2 (1+2t^3)^{-2/3} dt$$

(f) 
$$\int \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right) dx$$

(g) 
$$\int (x^2 - \sqrt{x}) dx$$

(h) 
$$\int (2-7t)^{2/3} dt$$

(i) 
$$\int x\sqrt{2x^2+1}\,dx$$

$$(j) \int \frac{dy}{(3y+2)^2}$$

2. Compute the exact area bounded by the x-axis, the given curve y = f(x), and the given vertical lines:

(a) 
$$y = x^2 + 1$$
,  $x = 0$ ,  $x = 3$ 

(b) 
$$y = 2x + 3$$
,  $x = 0$ ,  $x = 1$ 

(c) 
$$y = \sqrt{2x+1}$$
,  $x = 0$ ,  $x = 4$ 

(d) 
$$y = \frac{1}{\sqrt{2x+1}}$$
,  $x = 0$ ,  $x = 4$ 

(e) 
$$y = \frac{1}{(2x+1)^2}$$
,  $x = 1$ ,  $x = 2$ 

(f) 
$$y = x^3 + 2x + 1$$
,  $x = 0$ ,  $x = 2$ 

(g) 
$$y = x\sqrt{2x^2 + 1}$$
,  $x = 0$ ,  $x = 2$ 

(h) 
$$y = \frac{x}{\sqrt{2x^2 + 1}}$$
,  $x = 0$ ,  $x = 2$ 

- 3. Find the area between the curve  $y = 4 x^2$  and the x-axis.
- 4. Find the area between the curve  $y = \sqrt{1-x}$  and the coordinate axes.