

1. Evaluate the following integrals:

(a)  $\int (x^3 + 2x + 1) \, dx$

(b)  $\int 8x^3 (x^4 - 1)^3 \, dx$

2. Compute the exact area bounded by the  $x$ -axis, the given curve  $y = f(x)$ , and the given vertical lines. Be sure to show your work clearly.

(a)  $y = \sqrt{x+1}$  ,  $x = 0$  ,  $x = 3$

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