

1. Given  $G(x) = \int_3^{2x-1} e^{t^2} dt$ , find  $G'(2)$ .
2. Find  $\int_1^4 \frac{t^2 + 5}{2t} dt$
3. Find  $\int \frac{\cos(\sqrt{x})}{\sqrt{x}} dx$ .
4. Find  $\int_3^4 x^3(x^2 - 8)^{\frac{2}{3}} dx$
5. Find the area bounded by the curves  $y = x^2 - x$  and  $y = 2x - 2$ .
6. Let  $R$  be the region bounded by the curve  $y = \frac{1}{x^2}$  and the lines  $x = 1$ ,  $x = 2$ , and  $y = 0$ . Set up, but do not evaluate, an integral for the volume of the solid generated when the region  $R$  is revolved about the  $y$ -axis.
7. Let  $R$  be the region in the first quadrant bounded by the  $x$ -axis, the line  $x + y = 4$ , and the curve  $2y = x^2$ . Set up, but do not evaluate, an integral for the volume of the solid generated when  $R$  is revolved about the line  $x = -1$ .
8. Let  $R$  be the region bounded by the  $y$ -axis and the parabola  $x = 2y - y^2$ . Set up, but do not evaluate, an integral for the volume of the solid generated when  $R$  is revolved about the line  $y = -1$ .