1. Let $G(x) = \int_1^x (t^2 - 2)\, dt$. Calculate $G(1)$, $G'(1)$ and $G'(2)$. Then find a formula for $G(x)$.

2. Find $F(0)$, $F'(0)$, and $F'(3)$, where $F(x) = \int_0^x \sqrt{t^2 + t}\, dt$.

3. Find $G(1)$, $G'(0)$, and $G'(\pi/4)$, where $G(x) = \int_1^x \tan t\, dt$.

4. Find $H(-2)$ and $H'(-2)$, where $H(x) = \int_{-2}^x \frac{du}{u^2 + 1}$.

In Exercises 5–11, find formulas for the functions represented by the integrals.

5. $\int_2^x (12t^2 - 8t)\, dt$

6. $\int_0^x \sin u\, du$

7. $\int_{-\pi/4}^x \sec^2 \theta\, d\theta$

8. $\int_4^x e^{3u}\, du$

9. $\int_1^{x^2} t\, dt$

10. $\int_{3x}^{9x+2} e^{-u}\, du$

11. $\int_2^{\sqrt{x}} \frac{dt}{t}$