Evaluate the following integrals.

1. $\displaystyle\int_1^2 \frac{dx}{x^2 + 2x}$

2. $\displaystyle\int \frac{x\,dx}{x^2 + 4x - 5}$

3. $\displaystyle\int_4^8 \frac{y\,dy}{y^2 - 2y - 3}$

4. $\displaystyle\int_0^{1/2} \frac{dx}{1 - x^2}$

5. $\displaystyle\int \frac{2x + 1}{x^2 - 7x + 12}$

6. $\displaystyle\int_1^2 \frac{dx}{x^2 + 2x}$

7. $\displaystyle\int \frac{dt}{t^3 + t^2 - 2t}$

8. $\displaystyle\int \frac{dx}{x(x + 1)^2}$

9. $\displaystyle\int \frac{dx}{(x + 1)(x^2 + 1)}$

10. $\displaystyle\int \frac{(x + 2)\,dx}{x(x^2 + x + 1)}$

11. $\displaystyle\int \frac{\sin\theta\,d\theta}{\cos^2\theta + \cos\theta - 2}$

12. $\displaystyle\int \frac{e^t\,dt}{e^{2t} + 3e^t + 2}$