The following integrals are more challenging than the basic ones we've seen in the textbook so far. You will probably have to use more than one technique to solve them. Don't hesitate to ask for hints if you get stuck.

1. $\displaystyle \int \frac{\sin(t)\cos(t)}{\sin^2(t) + 6\sin(t) + 8}\,dt$

2. $\displaystyle \int \left(\sin^{-1}(x)\right)^2 dx$

3. $\displaystyle\int \frac{y^2}{(1-y^2)^{7/2}}\,dy$

4. $\displaystyle\int \frac{1}{x+2\sqrt{x}+1}\,dx$