ORDER OF INTEGRATION

Evaluate the following integrals by reversing the order of integration.

1. $\displaystyle\int_0^1 \int_{\sqrt{y}}^1 \sqrt{x^3+1}\ dxdy$

2. $\displaystyle\int_0^1 \int_{2y}^2 \sqrt{x^2+1}\ dxdy$

3. $\displaystyle\int_0^2 \int_{\frac{y}{2}}^1 \sin(x^2)\ dxdy$

4. $\displaystyle\int_0^2 \int_{\frac{y}{2}}^1 e^{x^2}\ dxdy$

5. $\displaystyle\int_0^1 \int_0^{\sqrt{x}} \frac{2xy}{1-y^4}\ dydx$