Solution (#1379) Set $u = \sin x$ to find

$$\int_0^{\pi/2} \cos x \sqrt{\sin x}\, \mathrm{d}x = \frac{2}{3}.$$

Set $u = \sqrt{x-1}$ to find

$$\int_2^{\infty} \frac{\mathrm{d}x}{x\sqrt{x-1}} = \frac{\pi}{2}.$$

Set $x = \sin t$ to find

$$\int_0^1 \exp(\sin^{-1} x)\ \mathrm{d}x = \frac{1}{2}\left[e^{\pi/2} - 1\right].$$