$$\int_{M\mathbb{B}} 1 \, d\lambda = 2 \int_{B((1,0),1)} \sqrt{4-x^2-y^2} \, dx dy = 2 \int_{\{(r,\varphi):\, r^2 - 2r\cos\varphi \le 0\}} \sqrt{4-r^2}\, r \, dr \, d\varphi =$$

Fubini

$$= 2 \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \int_0^{2\cos\varphi} \sqrt{4-r^2} \cdot r \, dr \, d\varphi = 2 \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} -\frac{2}{3} \cdot \frac{1}{2} (4-r^2)^{\frac{3}{2}} \Big|_0^{2\cos\varphi} d\varphi =$$

$$= 2 \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \frac{1}{3} 8 \left[(1-\cos^2\varphi)^{\frac{3}{2}} + 1 \right] d\varphi = 2 \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \frac{8}{3} \left[(\sin^2\varphi)^{\frac{3}{2}} + 1 \right] d\varphi =$$

$$= 2 \frac{8}{3} \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin^3\varphi + 1 \, d\varphi = \frac{16}{3} \pi.$$