$$y_G = \frac{\iint_{(S)} y\,dx\,dy}{\text{Aire}(S)} \quad \text{0,25}$$

en coordonnées polaires

$$y_G = \frac{1}{2\pi} \iint_{(S)} r^2 \sin\theta\, dr\, d\theta \quad \text{0,5}$$

$$= \frac{1}{2\pi} \int_{\frac{\pi}{3}}^{\frac{\pi}{2}+\frac{\pi}{6}} \left[\int_{1}^{3} r^2 \sin\theta\, dr \right] d\theta \quad \text{0,5}$$

$$= \frac{26}{6\pi} \int_{\frac{\pi}{3}}^{\frac{\pi}{2}+\frac{\pi}{6}} \sin\theta\, d\theta \quad \text{0,25}$$

$$= -\frac{26}{6\pi} \cos\theta \Big|_{\frac{\pi}{3}}^{\frac{\pi}{2}+\frac{\pi}{6}} \quad \text{0,25}$$

$$= -\frac{26}{6\pi} \left(\cos\left(\frac{\pi}{2}+\frac{\pi}{6}\right) - \cos\frac{\pi}{3} \right) \quad \text{0,25}$$

$$= -\frac{26}{6\pi} \left(-\sin\frac{\pi}{6} - \cos\frac{\pi}{3} \right) = -\frac{26}{6\pi} = -\frac{13}{3\pi}$$