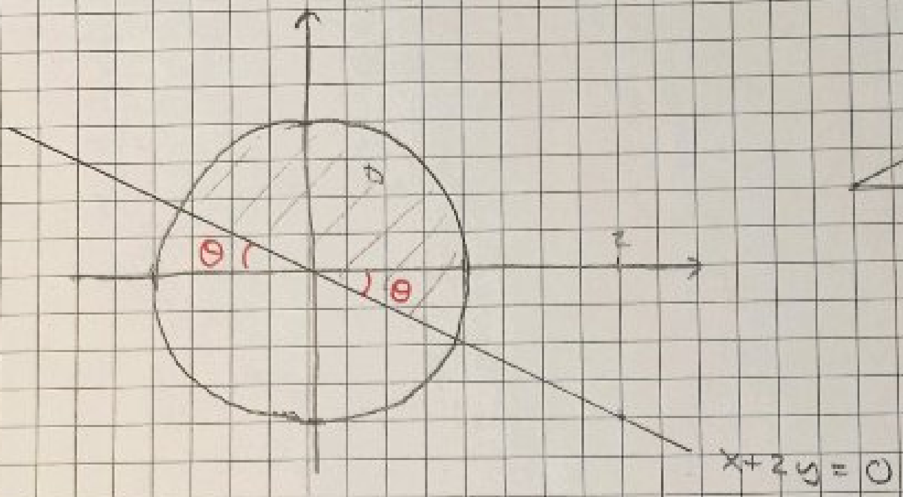
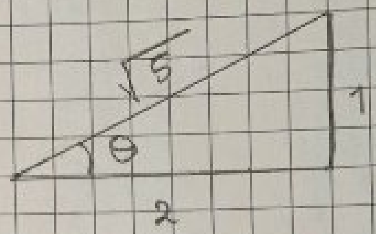
6.9c) Alternativ lösning:





$$\iint_D (x+2y)\,dx\,dy = \int_{-\theta}^{\pi-\theta} \left(\int_0^1 (\rho\cos\varphi + 2\rho\sin\varphi)\rho\,d\rho \right) d\varphi$$

$$= \int_{-\theta}^{\pi-\theta} (\cos\varphi + 2\sin\varphi)\,d\varphi \cdot \int_0^1 \rho^2\,d\rho =$$

$$= \Big[\sin\varphi - 2\cos\varphi \Big]_{-\theta}^{\pi-\theta} \cdot \left[\frac{\rho^3}{3} \right]_0^1 =$$

$$= \Big(\underbrace{\sin(\pi-\theta)}_{=\sin\theta} - 2\underbrace{\cos(\pi-\theta)}_{=-\cos\theta} - \underbrace{\sin(-\theta)}_{=-\sin\theta} + 2\underbrace{\cos(-\theta)}_{=\cos\theta} \Big) \frac{1}{3}$$

$$= \frac{1}{3} (2\sin\theta + 4\cos\theta) =$$

/Från triangeln ovan får vi $\sin\theta = \frac{1}{\sqrt{5}}$, $\cos\theta = \frac{2}{\sqrt{5}}$/

$$= \frac{1}{3}\left(\frac{2}{\sqrt{5}} + \frac{8}{\sqrt{5}} \right) = \frac{10}{3\sqrt{5}} = \underline{\underline{\frac{2\sqrt{5}}{3}}}.$$