1. $u = 1 + \cos(2\theta)$, $du = -2\sin(2\theta)\,d\theta$

$$\int \sin(2\theta)\sqrt{1+\cos(2\theta)}\,d\theta = -\tfrac{1}{2}\int \sqrt{u}\,du.$$

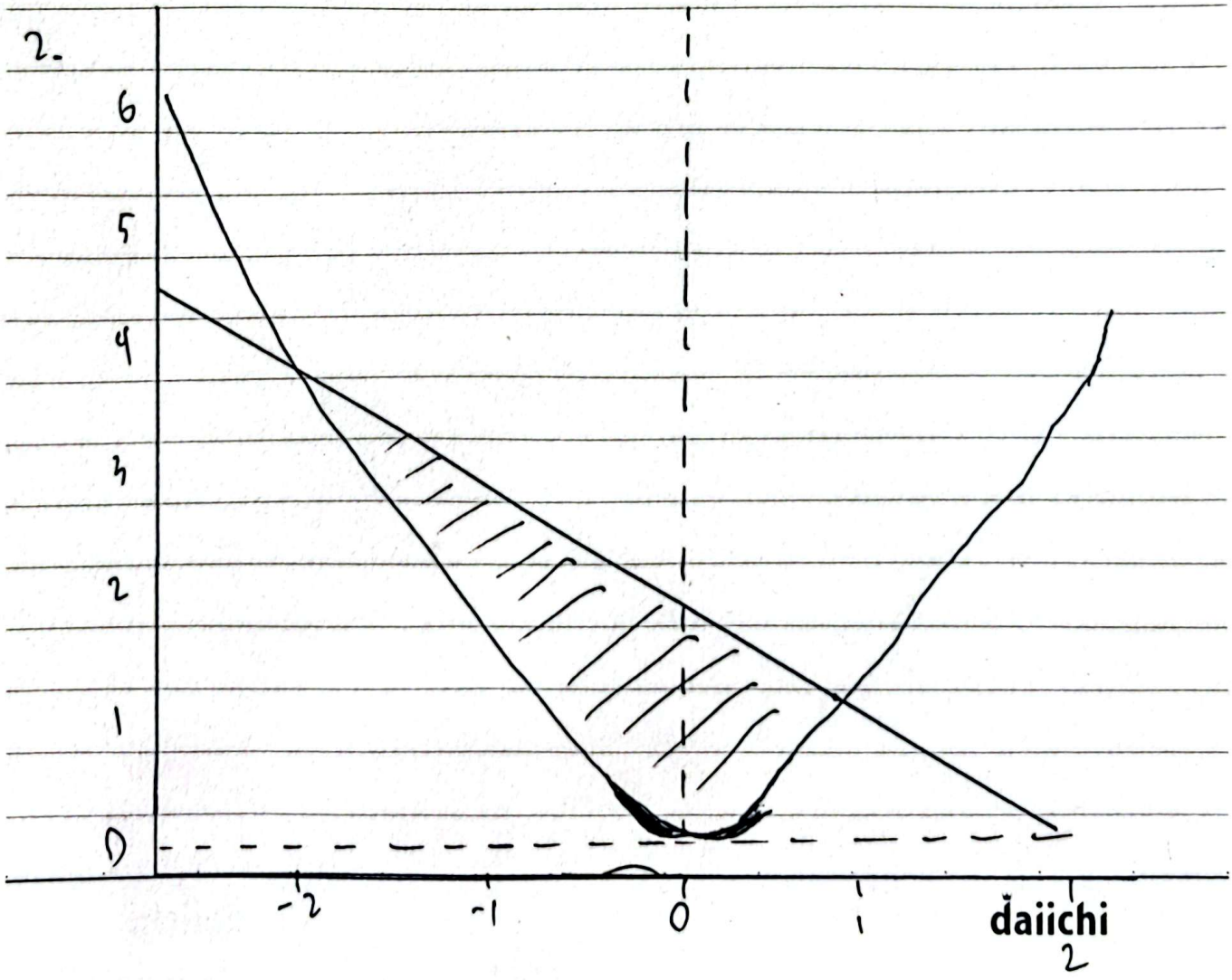
integral $\int \sqrt{u}\,du = \int u^{1/2}\,du = \tfrac{2}{3}u^{3/2}$

$\theta = 0$, $u = 1 + \cos(0) = 2$

$\theta = \pi/2$, $u = 1 + \cos(\pi) = 0$

$$-\tfrac{1}{2}\cdot\tfrac{2}{3}\left[u^{3/2}\right]_2^0 = -\tfrac{1}{3}\left[0 - 2^{3/2}\right] = \frac{2\sqrt{2}}{3}$$

2.



$v^2 = 2 - v \Rightarrow v^2 + v - 2 = 0 \Rightarrow (v+2)(v-1) = 0$

titik potong adalah $v = -2$ dan $v = 1$

$v = -2$ & $v = 1$

batas

$y = 2 - v$ fungsi bawah $y = v^2$

$\text{luas} = \int_{-2}^{1} [(2-v) - v^2]\, dv$

$\int_{-2}^{1} [2 - v - v^2]\, dv = \left[2v - \frac{v^2}{2} - \frac{v^3}{3}\right]_{-2}^{1}$

$\text{luas} = \left[2(1) - \frac{1^2}{2} - \frac{1^3}{3}\right] - \left[2(-2) - \frac{(-2)^2}{2} - \frac{(-2)^3}{3}\right]$

$\text{luasnya} = 9/2$

daiichi