$z = \sin x - \cos y$

$z_x = \cos x = 0$
$z_y = \sin y = 0$
$\Big\}$ $x = \frac{\pi}{2}, \frac{3}{2}\pi$, $y = \pi$

極値をとりうる点は $(\frac{\pi}{2}, \pi)$, $(\frac{3}{2}\pi, \pi)$

$z_{xx} = -\sin x$
$z_{yy} = \cos y$
$z_{xy} = 0$

$$H = \begin{vmatrix} -\sin x & 0 \\ 0 & \cos y \end{vmatrix} = -\sin x \cos y$$

$\left(\frac{\pi}{2}, \pi \right)$ のとき, $H = -\sin\frac{\pi}{2}\cos\pi = 1 > 0$

$z_{xx} = -\sin\frac{\pi}{2} = -1 < 0$ より極大値をとる.

$f\left(\frac{\pi}{2}, \pi\right) = \sin\frac{\pi}{2} - \cos\pi = 1 - (-1) = 2$

$\left(\frac{3}{2}\pi, \pi \right)$ のとき, $H = -\sin\frac{3}{2}\pi\cos\pi = -(-1)\cdot(-1) = -1 < 0$

極値をとらない