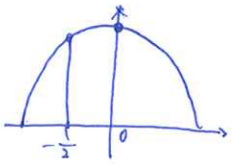
**18** $0° \leqq \theta \leqq 180°$ とする．以下の等式を満たす $\theta$ の値を求めよ．【★★】

(1) $2\cos^2\theta + \cos\theta = 0$

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

$\cos\theta = -\frac{1}{2},\ 0$



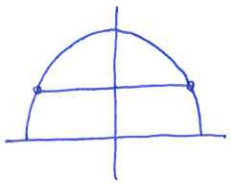

左図より

$\theta = 120°,\ 90°$

(2) $2\sin^2\theta + \sin\theta - 1 = 0$

$(2\sin\theta - 1)(\sin\theta + 1) = 0$

$\sin\theta = -1,\ \frac{1}{2}$



左図より

$\theta = 30°,\ 150°$

(3) $2 - 2\sin\theta - 2\cos^2\theta = 0$

$\sin^2\theta + \cos^2\theta = 1$ より

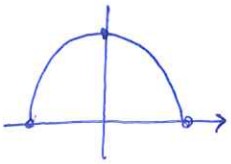
$\cos^2\theta = 1 - \sin^2\theta$

$2 - 2\sin\theta - 2\cos^2\theta = 0$

$2 - 2\sin\theta - 2(1 - \sin^2\theta) = 0$

$2\sin^2\theta - 2\sin\theta = 0$

$2\sin\theta(\sin\theta - 1) = 0$



左図より

$\theta = 0°,\ 90°,\ 180°$