数学Ⅰ　授業プリント ＃ 60

年　　組　　号

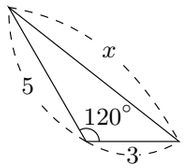
氏名

■ 余弦定理（余弦とは cos のことです）

余弦定理を使うと『二辺とその間の角度』が分かったときの『向かい側の辺の長さ』を計算することが出来る。

$$\begin{pmatrix}\text{角度の向かい}\\ \text{側の辺の長さ}\end{pmatrix}^2 = \text{辺}^2 + \text{辺}^2 - 2 \times \text{辺} \times \text{辺} \times \cos(\text{間の角度})$$

例題　右の三角形で，x の長さを求めなさい。



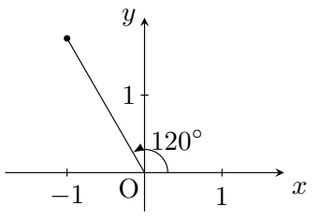
解　余弦定理より

$$x^2 = 3^2 + 5^2 - 2 \times 3 \times 5 \times \cos 120^\circ$$
$$x^2 = 9 + 25 - 2 \times 3 \times 5 \times \frac{-1}{2}$$
$$x^2 = 9 + 25 + 15$$
$$x^2 = 49$$

$x > 0$ だから　$x = \sqrt{49}$

$x = 7$

■ 120° の三角比

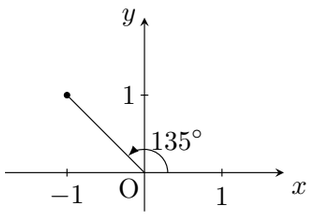


$\sin 120^\circ =$ □

$\cos 120^\circ =$ □

$\tan 120^\circ =$ □

■ 135° の三角比

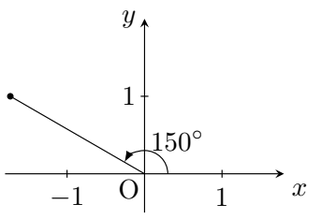


$\sin 120^\circ =$ □

$\cos 120^\circ =$ □

$\tan 120^\circ =$ □

■ 150° の三角比



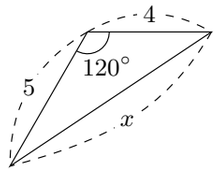
$\sin 120^\circ =$ □

$\cos 120^\circ =$ □

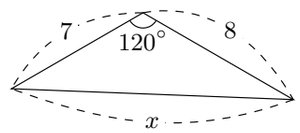
$\tan 120^\circ =$ □

1　次の三角形の辺の長さ x を求めなさい。

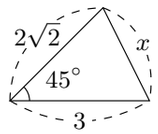
(1)



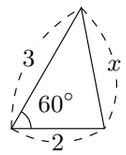
(2)



(3)



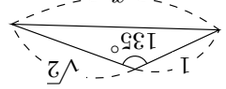
(4)



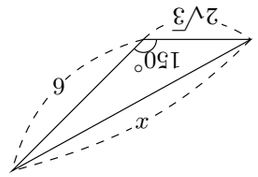
数学プリント＃60 (5) $\sqrt{5}$ (6) $2\sqrt{21}$ (7) $\sqrt{7}$ (8) 7

数学プリント#60 $\sin 120^\circ = \dfrac{\sqrt{3}}{2}, \cos 120^\circ = \dfrac{-1}{2}, \tan 120^\circ = -\sqrt{3}, \dfrac{1}{\sqrt{2}}, \dfrac{-1}{\sqrt{2}}, -1, \dfrac{1}{2}, \dfrac{-\sqrt{3}}{2}, \dfrac{1}{-\sqrt{3}}$ $\boxed{1}$ (1) $\sqrt{61}$ (2) 13 (3) $\sqrt{5}$ (4) $\sqrt{7}$

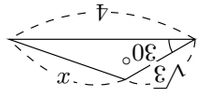
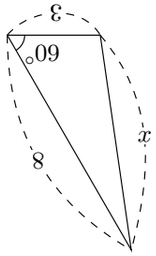
(5)



(6)



(7)



(8)