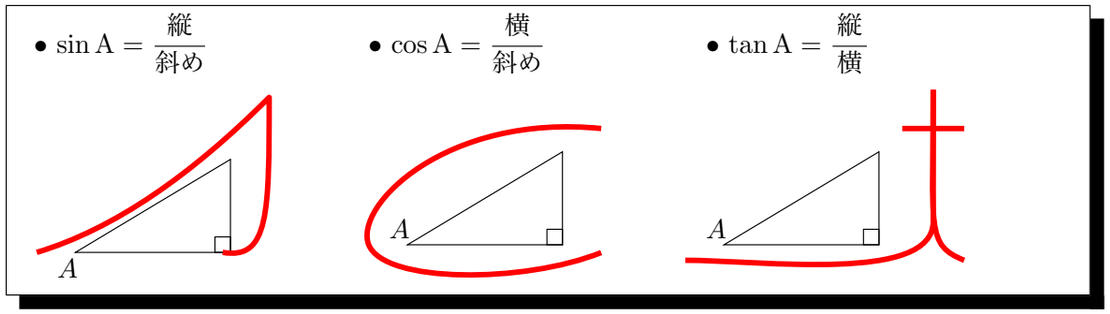
数学Ⅰ　授業プリント ＃ 56

年　　組　　号

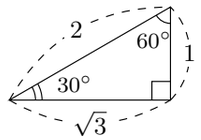
氏名

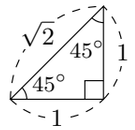
■ 三角比の拡張

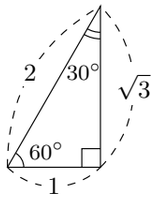
- $\sin \mathrm{A} = \dfrac{\text{縦}}{\text{斜め}}$
- $\cos \mathrm{A} = \dfrac{\text{横}}{\text{斜め}}$
- $\tan \mathrm{A} = \dfrac{\text{縦}}{\text{横}}$



1 **（復習）**次の直角三角形を用いて，30°，45°，60° の sin，cos，tan の値を求めなさい。





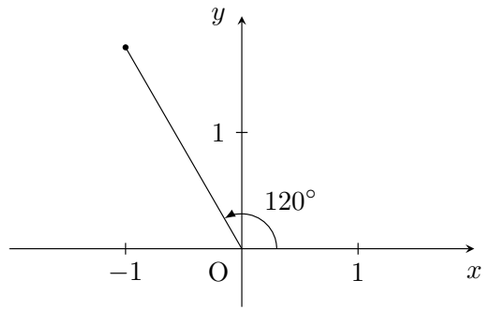


$\sin 30^\circ =$ □　　$\cos 30^\circ =$ □　　$\tan 30^\circ =$ □

$\sin 45^\circ =$ □　　$\cos 45^\circ =$ □　　$\tan 45^\circ =$ □

$\sin 60^\circ =$ □　　$\cos 60^\circ =$ □　　$\tan 60^\circ =$ □

■ 120° の三角比

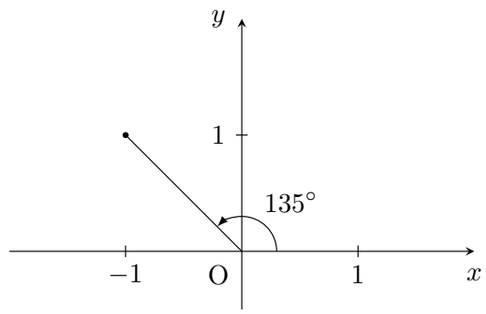


$\sin 120^\circ =$ □

$\cos 120^\circ =$ □

$\tan 120^\circ =$ □

■ 135° の三角比

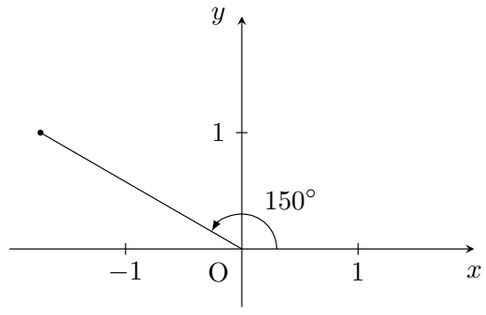


$\sin 135^\circ =$ □

$\cos 135^\circ =$ □

$\tan 135^\circ =$ □

■ 150° の三角比



$\sin 150^\circ =$ □

$\cos 150^\circ =$ □

$\tan 150^\circ =$ □

 1 (1) $\sqrt{21}$ (2) $\sqrt{13}$ (3) $\sqrt{5}$ (4) 7 (5) $2\sqrt{3}$ (6) $\sqrt{19}$ (7) $3\sqrt{5}$ (8) $\sqrt{7}$ (9) $\sqrt{7}$ (10) $2\sqrt{7}$

数学Ⅰ　授業プリント ＃ 59

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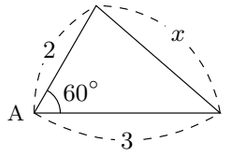
■　余弦定理（余弦（よげん）とは cos のことです）

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。

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

例題　右の三角形で，x の長さを求めなさい。

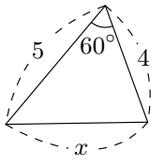


解　余弦定理より

$$x^2 = 2^2 + 3^2 - 2 \times 2 \times 3 \times \cos 60^\circ$$
$$x^2 = 4 + 9 - 2 \times 2 \times 3 \times \frac{1}{2}$$
$$x^2 = 4 + 9 - 6$$
$$x^2 = 7$$
$$x = \pm\sqrt{7}$$

$x > 0$ だから　　$x = \sqrt{7}$　　答

1　次の三角形の辺の長さ x を求めなさい。

(1)


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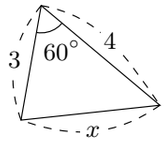

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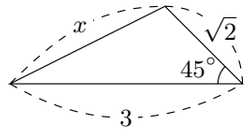

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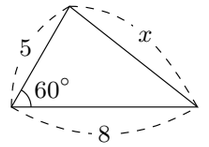
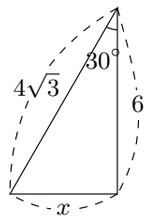


(5)


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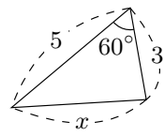

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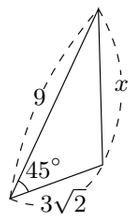

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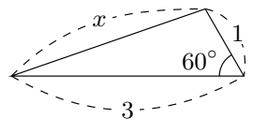

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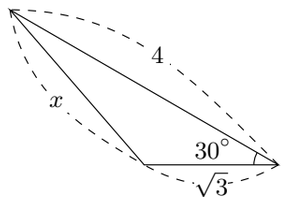

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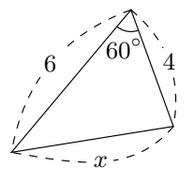

数学プリント＃56 $\sin 30^\circ = \frac{1}{2}$, $\sin 45^\circ = \frac{1}{\sqrt{2}}$, $\sin 60^\circ = \frac{\sqrt{3}}{2}$　$\cos 30^\circ = \frac{\sqrt{3}}{2}$, $\cos 45^\circ = \frac{1}{\sqrt{2}}$, $\cos 60^\circ = \frac{1}{2}$　$\tan 30^\circ = \frac{1}{\sqrt{3}}$, $\tan 45^\circ = 1$, $\tan 60^\circ = \sqrt{3}$　$\sin 120^\circ = \frac{\sqrt{3}}{2}$, $\cos 120^\circ = \frac{-1}{2}$, $\tan 120^\circ = -\sqrt{3}$　$\sin 135^\circ = \frac{1}{\sqrt{2}}$, $\cos 135^\circ = \frac{-1}{\sqrt{2}}$, $\tan 135^\circ = -1$

$\sin 150^\circ = \frac{1}{2}$, $\cos 150^\circ = \frac{-\sqrt{3}}{2}$, $\tan 150^\circ = \frac{-1}{\sqrt{3}}$