

加法定理の応用3半角の公式編

数Ⅱ (加法定理の応用③・半角の公式編)

⑩ $\sin^2 \frac{\alpha}{2} = \text{○}$, $\cos^2 \frac{\alpha}{2} = \text{○}$, $\tan^2 \frac{\alpha}{2} = \text{○}$

∵ $\frac{3}{2}\pi < \alpha < 2\pi$ で、 $\sin \alpha = -\frac{3}{5}$ のとき、次の値を求めよう。

④ $\sin \frac{\alpha}{2}$

⑤ $\cos \frac{\alpha}{2}$

⑥ $\tan \frac{\alpha}{2}$

数Ⅱ (加法定理の応用③・半角の公式編)

⑩ $\sin^2 \frac{\alpha}{2} = \text{○} \frac{1 - \cos \alpha}{2}$, $\cos^2 \frac{\alpha}{2} = \text{○} \frac{1 + \cos \alpha}{2}$, $\tan^2 \frac{\alpha}{2} = \text{○} \frac{1 - \cos \alpha}{1 + \cos \alpha}$

∵ $\frac{3}{2}\pi < \alpha < 2\pi$ で、 $\sin \alpha = -\frac{3}{5}$ のとき、次の値を求めよう。

④ $\sin \frac{\alpha}{2}$ $\cos \alpha = 1 - \frac{9}{25} = \frac{16}{25} \rightarrow \cos \alpha = \pm \frac{4}{5} \therefore \cos \alpha = \frac{4}{5}$ $\frac{1}{5} \times \frac{5}{4}$

⑤ $\cos \frac{\alpha}{2}$ $\sin \frac{\alpha}{2} = \frac{1 - \frac{4}{5}}{2} = \frac{1}{10}$ $\frac{3}{4}\pi < \frac{\alpha}{2} < \pi$ $\sin \frac{\alpha}{2} = \frac{1 - \frac{4}{5}}{2} = \frac{1}{10}$

⑥ $\tan \frac{\alpha}{2}$ $\sin \frac{\alpha}{2} = \pm \frac{\sqrt{10}}{10}$ $\cos \frac{\alpha}{2} = \frac{1 + \frac{4}{5}}{2} = \frac{9}{10}$ $\tan \frac{\alpha}{2} = \frac{1 - \frac{4}{5}}{1 + \frac{4}{5}} = \frac{1}{9}$

$\sin \frac{\alpha}{2} = \frac{\sqrt{10}}{10}$ $\cos \frac{\alpha}{2} = \pm \frac{3\sqrt{10}}{10}$ $\tan \frac{\alpha}{2} = \pm \frac{1}{3}$

$\cos \frac{\alpha}{2} = -\frac{3\sqrt{10}}{10}$ $\tan \frac{\alpha}{2} = -\frac{1}{3}$