配凑法求值

设α为锐角，若$\cos\left(\alpha+\frac{\pi}{6}\right)=\frac{4}{5}$，则$\sin\left(2\alpha+\frac{\pi}{6}\right)$的值为_____.

练习：

1. 设α为锐角，向量$\boldsymbol{a}=(\cos\alpha,\sin\alpha)$，$\boldsymbol{b}=(1,-1)$，若$\boldsymbol{a}\cdot\boldsymbol{b}=\frac{2\sqrt{2}}{3}$，则$\sin\left(\alpha+\frac{5\pi}{12}\right)=$_____.

2. (2016 新课标Ⅱ卷)若$\cos\left(\frac{\pi}{4}-\alpha\right)=\frac{3}{5}$，则$\sin 2\alpha=$ (　　)

A. $\frac{7}{25}$　　B. $\frac{1}{5}$　　C. $-\frac{1}{5}$　　D. $-\frac{7}{25}$

3. (2019 成都三诊)已知$\sin\left(\frac{\alpha}{2}+\frac{\pi}{4}\right)=\frac{1}{3}$，则$\sin\alpha=$ (　　)

A. $-\frac{7}{9}$　　B. $-\frac{2}{9}$　　C. $\frac{2}{9}$　　D. $\frac{7}{9}$

4. (2019 成都二诊)若α和β都是锐角，且$\sin\alpha=\frac{2\sqrt{5}}{5}$，$\sin(\alpha-\beta)=\frac{\sqrt{10}}{10}$，则$\sin\beta=$ (　　)

A. $\frac{7\sqrt{2}}{10}$　　B. $\frac{\sqrt{2}}{2}$　　C. $\frac{1}{2}$　　D. $\frac{1}{10}$

(2015 江苏)已知$\tan\alpha=-2$，$\tan(\alpha+\beta)=\frac{1}{7}$，则$\tan\beta$的值为_____.

10. 已知$\sin\left(x+\frac{\pi}{3}\right)=\frac{1}{3}$，则$\sin\left(\frac{2\pi}{3}-x\right)+\sin^2\left(\frac{\pi}{6}-x\right)=$_____.