

32. $\left\{ \begin{aligned} \cos \theta &= \frac{2}{5}, \quad \frac{3\pi}{2} \leq \theta \leq 2\pi \\ \sin \theta &= -\sqrt{1 - \frac{4}{25}} = -\frac{\sqrt{21}}{5} \end{aligned} \right.$

$\rightarrow \cot 2\theta = \frac{1}{\tan 2\theta}$

kos

$\left\{ \begin{aligned} \tan 2\theta &= 2 \cot \theta = 2 \left(-\frac{\sqrt{21}}{5}\right) \frac{2}{5} \\ &= -\frac{4\sqrt{21}}{25} \end{aligned} \right.$

$\cot 2\theta = \frac{-25}{4\sqrt{21}}$

$\rightarrow \csc 2\theta = \frac{1}{\sin 2\theta}$

$\left\{ \begin{aligned} \cos 2\theta &= \cos^2 \theta - \sin^2 \theta \\ &= \frac{4}{25} - \frac{21}{25} = -\frac{17}{25} \end{aligned} \right.$

$\csc 2\theta = \frac{-25}{17}$

33. $\text{tg } a = \frac{1}{2}, \quad 0 \leq a \leq \frac{\pi}{2}$

$\begin{aligned} \text{tg } 2a &= \frac{2 \text{tg } a}{1 - \text{tg}^2 a} \\ &= \frac{2 \cdot \frac{1}{2}}{1 - \frac{1}{4}} = \frac{1}{\frac{3}{4}} \\ &= \frac{4}{3} \end{aligned}$

34. $\text{tg } a = 2, \quad \pi \leq a \leq \frac{3\pi}{2}$

$\text{tg } 2a = \frac{2 \text{tg } a}{1 - \text{tg}^2 a}$

$\text{tg } 4a = \frac{2 \text{tg } 2a}{1 - \text{tg}^2 2a}$

pari

$\text{tg } 2a = \frac{2 \cdot 2}{1 - 4} = -\frac{4}{3}$

$\text{tg } 4a = \frac{2 \left(-\frac{4}{3}\right)}{1 - \left(-\frac{4}{3}\right)^2} = \frac{-\frac{8}{3}}{1 - \frac{16}{9}}$

$= \frac{-\frac{8}{3}}{-\frac{7}{9}} = \frac{+8 \cdot \frac{9}{3}}{7}$

$= \frac{24}{7}$