Enunciados

Calcula de modo exacto todas las razones trigonométricas del ángulo agudo α usando el dato de cada enunciado. Escribe los resultados del modo más sencillo que sea posible, con radicales y fracciones irreducibles si es necesario, y sin que aparezcan radicales en el denominador.

① $\operatorname{sen}\alpha = \dfrac{3}{5}$

② $\cos\alpha = \dfrac{5}{13}$

③ $\operatorname{tg}\alpha = \sqrt{15}$

④ $\sec\alpha = \sqrt{3}$

⑤ $\csc\alpha = \dfrac{2\sqrt{6}}{3}$

⑥ $\operatorname{ctg}\alpha = 3$

⑦ $\operatorname{sen}\alpha = \dfrac{\sqrt{15}}{5}$

⑧ $\cos\alpha = \dfrac{15}{17}$

⑨ $\operatorname{tg}\alpha = \dfrac{\sqrt{21}}{2}$

⑩ $\sec\alpha = 5$

⑪ $\csc\alpha = \dfrac{85}{13}$

⑫ $\operatorname{ctg}\alpha = \dfrac{\sqrt{5}}{2}$

⑬ $\operatorname{sen}\alpha = \dfrac{\sqrt{24}}{7}$

⑭ $\cos\alpha = \dfrac{5}{8}$

⑮ $\operatorname{tg}\alpha = \dfrac{\sqrt{51}}{7}$

⑯ $\sec\alpha = 9$

⑰ $\csc\alpha = \dfrac{4}{3}$

⑱ $\operatorname{ctg}\alpha = \sqrt{6}$

Soluciones

① $\cos\alpha = \dfrac{4}{5}$; $\operatorname{tg}\alpha = \dfrac{3}{4}$; $\sec\alpha = \dfrac{5}{4}$; $\csc\alpha = \dfrac{5}{3}$; $\operatorname{ctg}\alpha = \dfrac{4}{3}$

② $\operatorname{sen}\alpha = \dfrac{12}{13}$; $\operatorname{tg}\alpha = \dfrac{12}{5}$; $\sec\alpha = \dfrac{13}{5}$; $\csc\alpha = \dfrac{13}{12}$; $\operatorname{ctg}\alpha = \dfrac{5}{12}$

③ $\operatorname{sen}\alpha = \dfrac{\sqrt{15}}{4}$; $\cos\alpha = \dfrac{1}{4}$; $\sec\alpha = 4$; $\csc\alpha = \dfrac{4\sqrt{15}}{15}$; $\operatorname{ctg}\alpha = \dfrac{\sqrt{15}}{15}$

④ $\operatorname{sen}\alpha = \dfrac{\sqrt{6}}{3}$; $\cos\alpha = \dfrac{\sqrt{3}}{3}$; $\operatorname{tg}\alpha = \sqrt{2}$; $\csc\alpha = \dfrac{\sqrt{6}}{2}$; $\operatorname{ctg}\alpha = \dfrac{\sqrt{2}}{2}$

⑤ $\operatorname{sen}\alpha = \dfrac{\sqrt{6}}{4}$; $\cos\alpha = \dfrac{\sqrt{10}}{4}$; $\operatorname{tg}\alpha = \dfrac{\sqrt{15}}{5}$; $\sec\alpha = \dfrac{2\sqrt{10}}{5}$; $\operatorname{ctg}\alpha = \dfrac{\sqrt{15}}{3}$

⑥ $\operatorname{sen}\alpha = \dfrac{\sqrt{10}}{10}$; $\cos\alpha = \dfrac{3\sqrt{10}}{10}$; $\operatorname{tg}\alpha = \dfrac{1}{3}$; $\sec\alpha = \dfrac{\sqrt{10}}{3}$; $\csc\alpha = \sqrt{10}$

⑦ $\cos\alpha = \dfrac{\sqrt{10}}{5}$; $\operatorname{tg}\alpha = \dfrac{\sqrt{6}}{2}$; $\sec\alpha = \dfrac{\sqrt{10}}{2}$; $\csc\alpha = \dfrac{\sqrt{15}}{3}$; $\operatorname{ctg}\alpha = \dfrac{\sqrt{6}}{3}$

⑧ $\operatorname{sen}\alpha = \dfrac{8}{17}$; $\operatorname{tg}\alpha = \dfrac{8}{15}$; $\sec\alpha = \dfrac{17}{5}$; $\csc\alpha = \dfrac{17}{8}$; $\operatorname{ctg}\alpha = \dfrac{15}{8}$

⑨ $\operatorname{sen}\alpha = \dfrac{\sqrt{21}}{5}$; $\cos\alpha = \dfrac{2}{5}$; $\sec\alpha = \dfrac{5}{2}$; $\csc\alpha = \dfrac{5\sqrt{21}}{21}$; $\operatorname{ctg}\alpha = \dfrac{2\sqrt{21}}{21}$

⑩ $\operatorname{sen}\alpha = \dfrac{\sqrt{24}}{5}$; $\cos\alpha = \dfrac{1}{5}$; $\operatorname{tg}\alpha = \sqrt{24}$; $\csc\alpha = \dfrac{5\sqrt{24}}{24}$; $\operatorname{ctg}\alpha = \dfrac{\sqrt{24}}{24}$

⑪ $\operatorname{sen}\alpha = \dfrac{13}{84}$; $\cos\alpha = \dfrac{84}{85}$; $\operatorname{tg}\alpha = \dfrac{13}{84}$; $\sec\alpha = \dfrac{85}{84}$; $\operatorname{ctg}\alpha = \dfrac{84}{13}$

⑫ $\operatorname{sen}\alpha = \dfrac{2}{3}$; $\cos\alpha = \dfrac{\sqrt{5}}{3}$; $\operatorname{tg}\alpha = \dfrac{2\sqrt{5}}{5}$; $\sec\alpha = \dfrac{3\sqrt{5}}{5}$; $\csc\alpha = \dfrac{3}{2}$

⑬ $\cos\alpha = \dfrac{5}{7}$; $\operatorname{tg}\alpha = \dfrac{\sqrt{24}}{5}$; $\sec\alpha = \dfrac{7}{5}$; $\csc\alpha = \dfrac{7\sqrt{24}}{24}$; $\operatorname{ctg}\alpha = \dfrac{5\sqrt{24}}{24}$

⑭ $\operatorname{sen}\alpha = \dfrac{\sqrt{39}}{8}$; $\operatorname{tg}\alpha = \dfrac{\sqrt{39}}{5}$; $\sec\alpha = \dfrac{8}{5}$; $\csc\alpha = \dfrac{8\sqrt{39}}{39}$; $\operatorname{ctg}\alpha = \dfrac{5\sqrt{39}}{39}$

⑮ $\operatorname{sen}\alpha = \dfrac{\sqrt{51}}{10}$; $\cos\alpha = \dfrac{7}{10}$; $\sec\alpha = \dfrac{10}{7}$; $\csc\alpha = \dfrac{10\sqrt{51}}{51}$; $\operatorname{ctg}\alpha = \dfrac{7\sqrt{51}}{51}$

⑯ $\operatorname{sen}\alpha = \dfrac{\sqrt{80}}{9}$; $\cos\alpha = \dfrac{1}{9}$; $\operatorname{tg}\alpha = \sqrt{80}$; $\csc\alpha = \dfrac{9\sqrt{80}}{80}$; $\operatorname{ctg}\alpha = \dfrac{\sqrt{80}}{80}$

⑰ $\operatorname{sen}\alpha = \dfrac{3}{4}$; $\cos\alpha = \dfrac{\sqrt{7}}{4}$; $\operatorname{tg}\alpha = \dfrac{3\sqrt{7}}{7}$; $\sec\alpha = \dfrac{4\sqrt{7}}{7}$; $\operatorname{ctg}\alpha = \dfrac{\sqrt{7}}{3}$

⑱ $\operatorname{sen}\alpha = \dfrac{\sqrt{7}}{7}$; $\cos\alpha = \dfrac{\sqrt{42}}{7}$; $\operatorname{tg}\alpha = \dfrac{\sqrt{6}}{6}$; $\sec\alpha = \dfrac{\sqrt{42}}{6}$; $\csc\alpha = \sqrt{7}$