Trigonometric Identities

1. Show that $\tan x \cos x = \sin x$

2. Show that $\dfrac{\sin x}{\tan x} = \cos x$

3. Show that $\dfrac{\tan x}{\sin x} = \dfrac{1}{\cos x}$

4. Show that $\dfrac{\sin^2 x}{\tan x} = \sin x \cos x$

5. Show that $\dfrac{1 - \cos^2 A}{\cos^2 A} = \tan^2 A$

6. Show that $\dfrac{1 - \sin^2 A}{\cos^2 A} = 1$

7. Show that $(\cos x + \sin x)^2 = 1 + 2\sin x \cos x$

8. Show that $(\cos x + \sin x)(\cos x - \sin x) + 2\sin^2 x = 1$

9. Show that $\sin^3 x + \sin x \cos^2 x = \sin x$

10. Show that $\cos^2 x \sin^2 x + \cos^4 x = \cos^2 x$

11. Show that $\dfrac{\sin x}{\cos^3 x + \cos x \sin^2 x} = \tan x$

12. Show that $\tan^2 x \cos^2 x = 1 - \cos^2 x$

13. If $\sin x = \frac{3}{5}$ and $\cos x = \frac{4}{5}$ show that $\tan x = \frac{3}{4}$

14. If $\sin x = \frac{5}{13}$ and $\cos x = \frac{12}{13}$ show that $\tan x = \frac{5}{12}$

15. If $\sin x = \frac{24}{25}$ and $\cos x = \frac{7}{25}$ show that $\tan x = \frac{24}{7}$