Answer on the Question #80408 – Math – Trigonometry

Question

if cosec alpha +cot alpha =2√3 than prove that cos alpha =2\√5

Solution

Now, let's solve the following equation:

Cosec(x) + cot(x) = 2*sqrt(3);

(1 + cos(x)) / sin(x) = 2*sqrt(3); | ^2

$(1 + \cos(x))^2 = 12 * \sin^2(x)$;

$(1 + \cos(x))^2 = 12 * (1 - \cos^2(x))$;

$1 + 2*\cos(x) + \cos^2(x) = 12 - 12*\cos^2(x)$;

$13*\cos^2(x) + 2*\cos(x) - 11 = 0$;

$D = 4 + 4*13*11 = 576 = 24^2$;

Cos(x) = (-2 ± 24) / 26;

$\text{Cos}(x)_1 = -1$;

$\text{Cos}(x)_2 = 22/26 = 11/13$;

So, cos(x) can be –1 or 11/13, it is not equal to 2\√5, hence the statement of question is false.