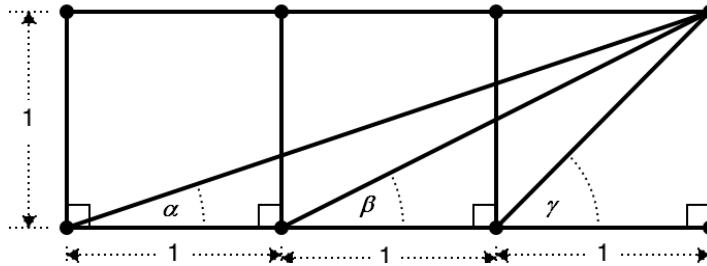


1. Present a proof for the sum formulas:

$$\sin(x + y) = \sin x \cos y + \cos x \sin y$$

$$\cos(x + y) = \cos x \cos y - \sin x \sin y$$

2. Find a geometric proof for the fact we have proved using trigonometry: that $\gamma = \alpha + \beta$ where α , β and γ are the angles shown on the picture below.



3. Discuss the domain of both sides in the sum formula for tangent:

$$\tan(x + y) = \frac{\tan x + \tan y}{1 - \tan x \tan y}$$

4. Solve $\log_{x-3}(x + 20) \cdot \log_x(x - 3) = 2$
5. Prove that there is no triangle with altitudes 1, 2, and 3 units long.
6. Find an equation for all tangent lines drawn to the graph of $(x - 7)^2 + (y - 4)^2 = 50$ from the point $(-3, -16)$.