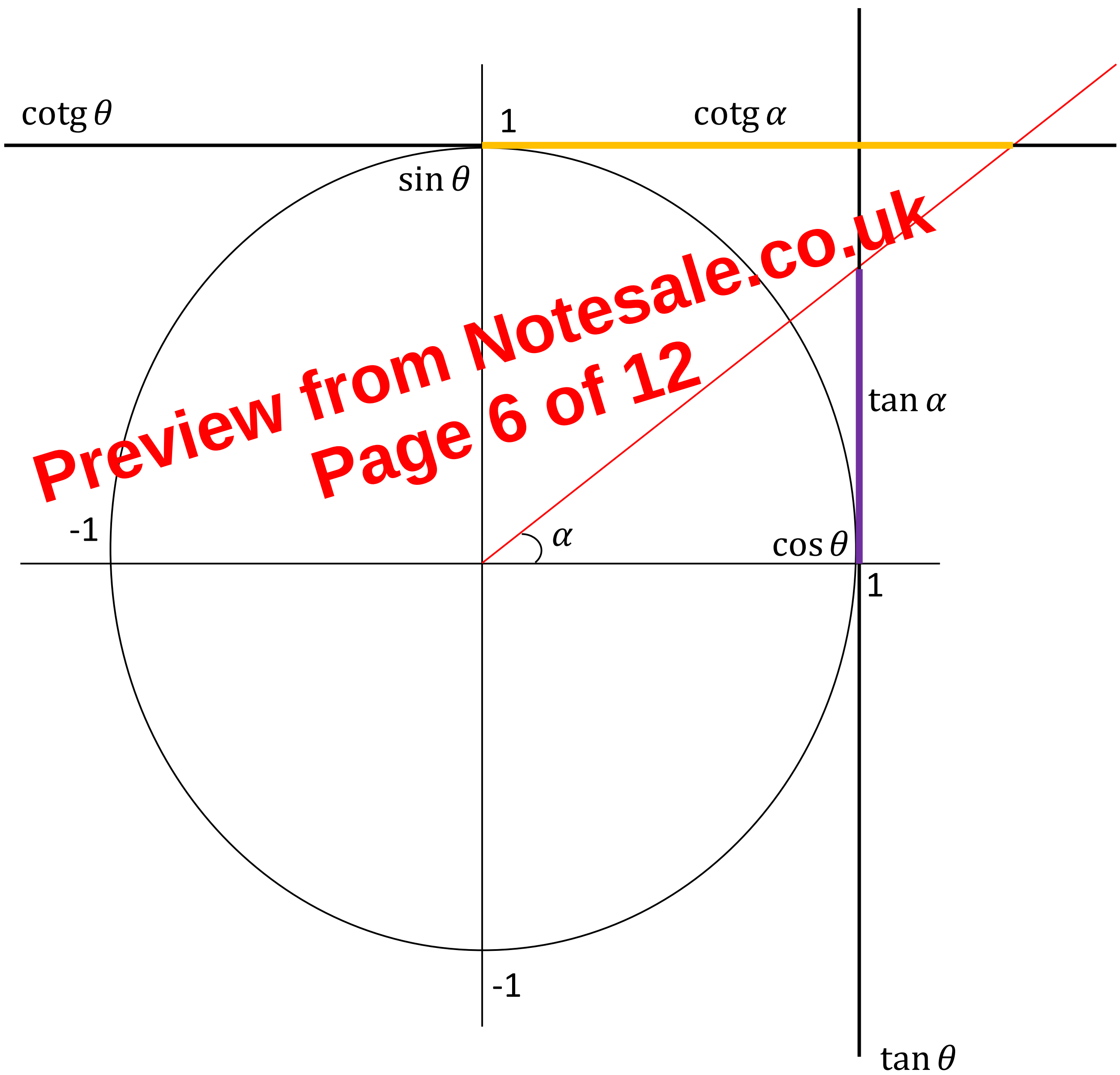
3. Prove that: $\sin 115° \cdot \tan 25° = \cos 65°$.
4. Looking at the circle, try to figure out the values for:
   $\sin 30°$, $\sin 45°$, $\sin 60°$, $\sin 90°$, $\sin 180°$ and so on for $\cos\alpha$.

✓ *Getting deeper into Trigonometric Circle*



5. Expressing $\sin x$, $\cos x$ and $\tan x$ in terms of $\tan \frac{x}{2}$:

$$\sin x = \frac{2 \tan \frac{x}{2}}{1 + \tan^2 \frac{x}{2}}, \tag{18}$$

$$\cos x = \frac{1 - \tan^2 \frac{x}{2}}{1 + \tan^2 \frac{x}{2}}, \tag{19}$$

$$\tan x = \frac{2 \tan \frac{x}{2}}{1 - \tan^2 \frac{x}{2}}. \tag{20}$$

6. Inverse trigonometric functions.
(a) Principal values of inverse trigonometric functions:

$$y = \operatorname{arc} \sin x, \quad \text{if} \quad x = \sin y \quad \text{and} \quad -\frac{\pi}{2} \leqslant y \leqslant \frac{\pi}{2}, \tag{21}$$

$$y = \operatorname{arc} \cos x \quad \text{if} \quad x = \cos y \quad \text{and} \quad 0 \leqslant y \leqslant \pi, \tag{22}$$

$$y = \operatorname{arc} \tan x \quad \text{if} \quad x = \tan y \quad \text{and} \quad -\frac{\pi}{2} < y < \frac{\pi}{2}, \tag{23}$$

$$y = \operatorname{arc} \cot x \quad \text{if} \quad x = \cot y \quad \text{and} \quad 0 < y < \pi. \tag{24}$$

(b) Multiple-valued functions:

$$\operatorname{Arc} \sin x = (-1)^n \operatorname{arc} \sin x + \pi n, \quad n = 0, \ \pm 1, \ \pm 2, \ \ldots, \tag{25}$$

$$\operatorname{Arc} \cos x = \pm \operatorname{arc} \cos x + 2\pi n, \tag{26}$$

$$\operatorname{Arc} \tan x = \operatorname{arc} \tan x + \pi n, \tag{27}$$

$$\operatorname{Arc} \cot x = \operatorname{arc} \cot x + \pi n. \tag{28}$$

Formulas (25) to (28) determine the general expressions for the angles corresponding to given values of trigonometric functions.