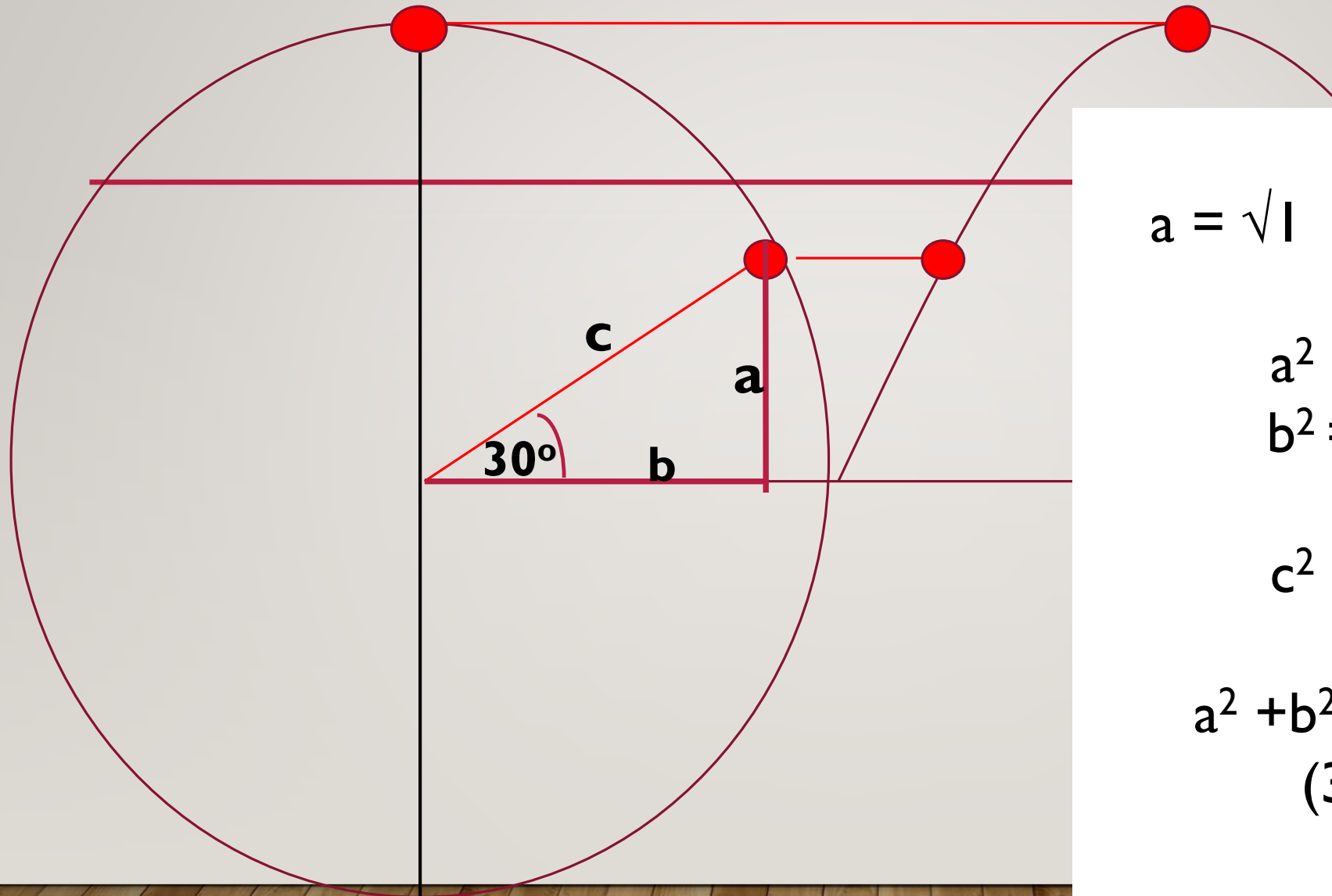


SIMPLE EXPLANATION OF

$\text{SIN } 30^\circ = \frac{1}{2}$ AND $\text{SIN } 60^\circ = \frac{\sqrt{3}}{2}$ AND

$\text{COS } 60^\circ = \frac{1}{2}$ AND $\text{COS } 30^\circ = \frac{\sqrt{3}}{2}$



suppose

$$a = \sqrt{1} \quad b = \sqrt{3} \quad c = \sqrt{4}$$

$$a^2 = (\sqrt{1})^2 = 1$$

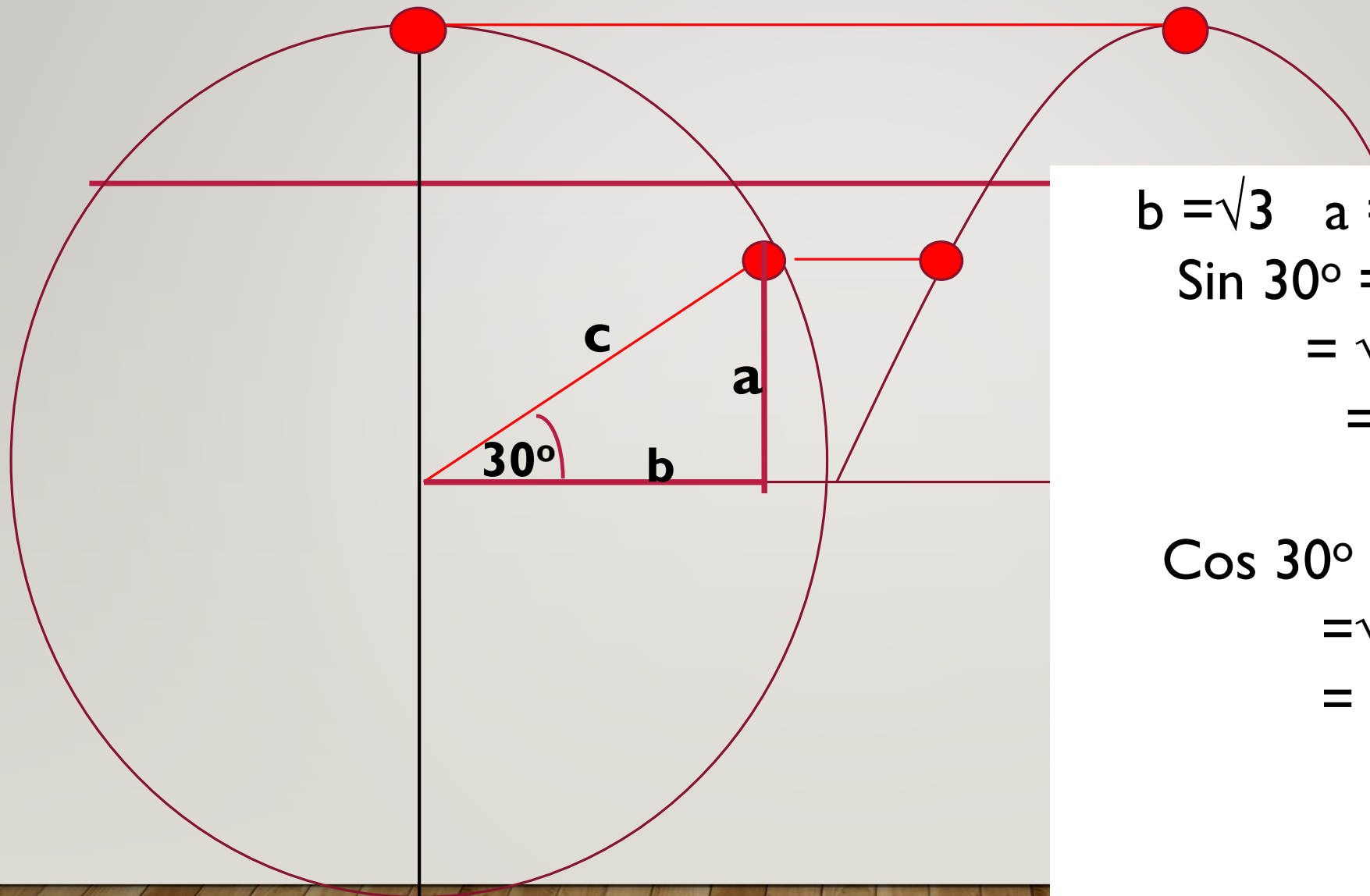
$$b^2 = (\sqrt{3})^2 = 3$$

and

$$c^2 = (\sqrt{4})^2 = 4$$

$$a^2 + b^2 = c^2 \text{ (pythag.)}$$

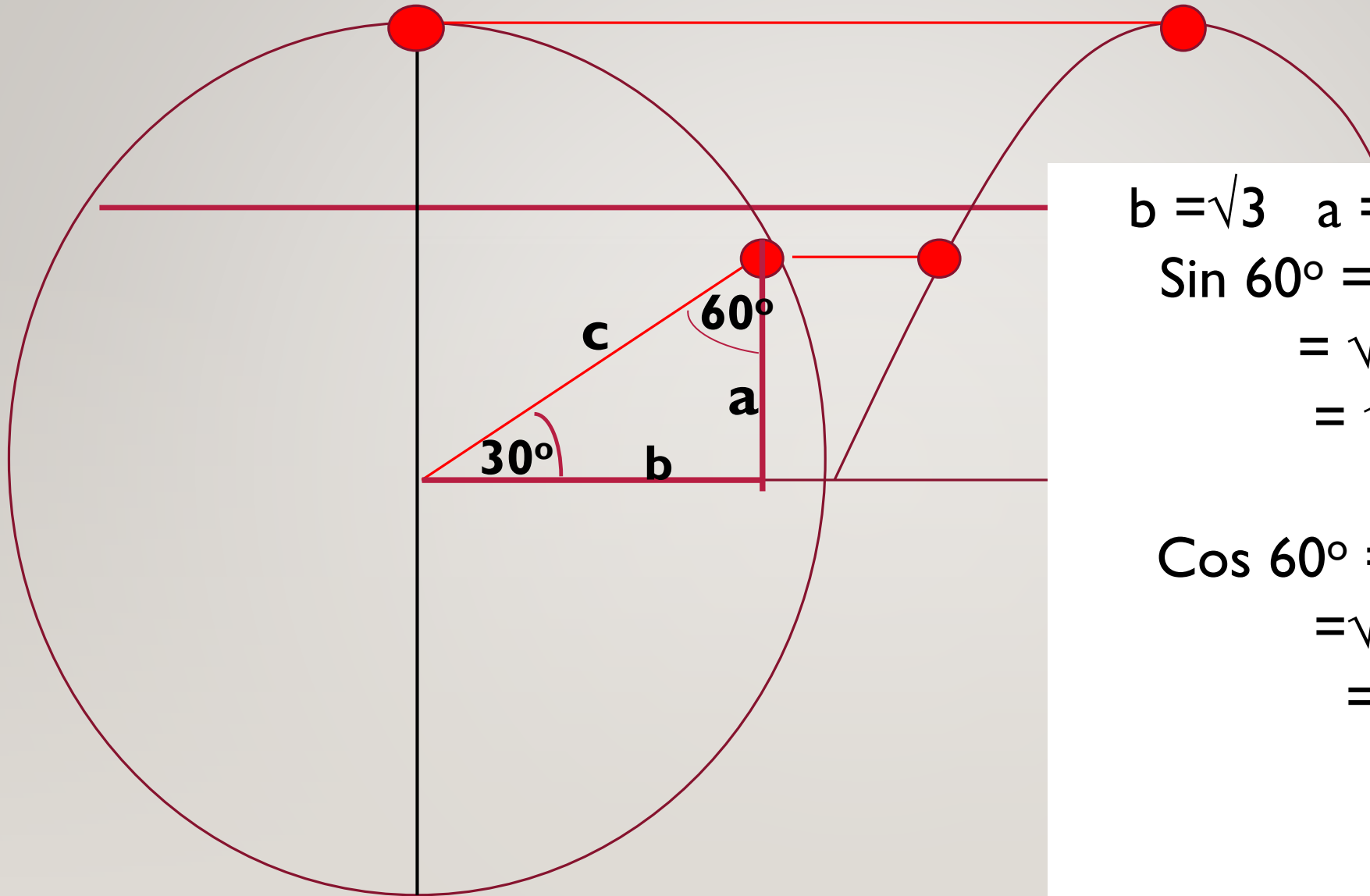
$$(3 + 1 = 4)$$



$$b = \sqrt{3} \quad a = \sqrt{1} \quad c = \sqrt{4}$$

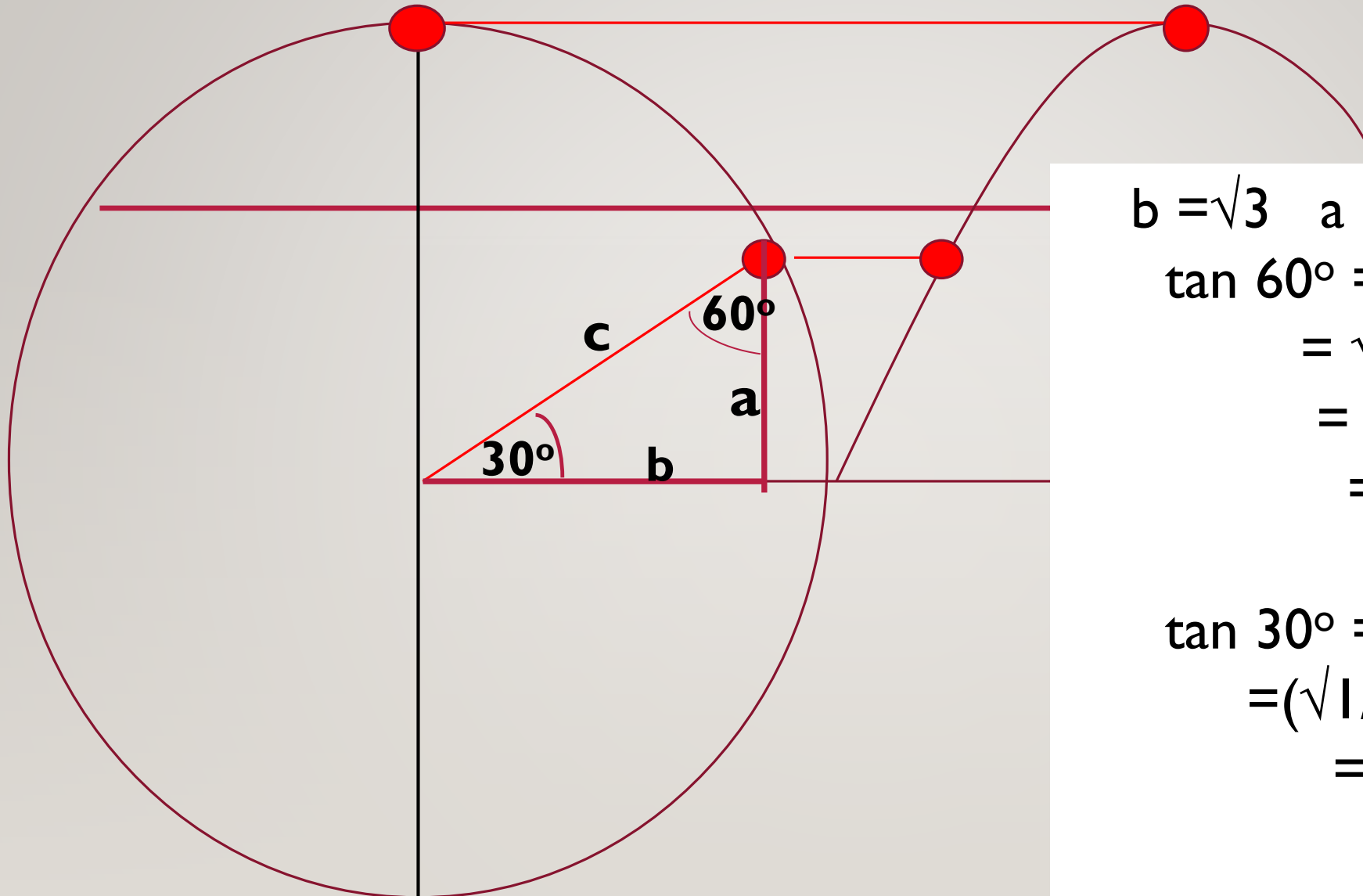
$$\begin{aligned} \sin 30^\circ &= a/c \text{ (opp/hyp)} \\ &= \sqrt{1} / \sqrt{4} \\ &= 1/2 \end{aligned}$$

$$\begin{aligned} \cos 30^\circ &= b/c \text{ (adj/hyp)} \\ &= \sqrt{3} / \sqrt{4} \\ &= \sqrt{3} / 2 \end{aligned}$$



$$b = \sqrt{3} \quad a = \sqrt{1} \quad c = \sqrt{4}$$
$$\sin 60^\circ = b/c \text{ (opp/hyp)}$$
$$= \sqrt{3} / \sqrt{4}$$
$$= \sqrt{3} / 2$$

$$\cos 60^\circ = a/c \text{ (adj/hyp)}$$
$$= \sqrt{1} / \sqrt{4}$$
$$= 1/2$$



$$b = \sqrt{3} \quad a = \sqrt{1} \quad c = \sqrt{4}$$

$$\tan 60^\circ = b/a \text{ (opp/adj)}$$

$$= \sqrt{3} / \sqrt{1}$$

$$= \sqrt{3} / 1$$

$$= \sqrt{3}$$

$$\tan 30^\circ = a/b \text{ (opp/adj)}$$

$$= (\sqrt{1} / \sqrt{3}) * \sqrt{3}$$

$$= \sqrt{3} / 3$$