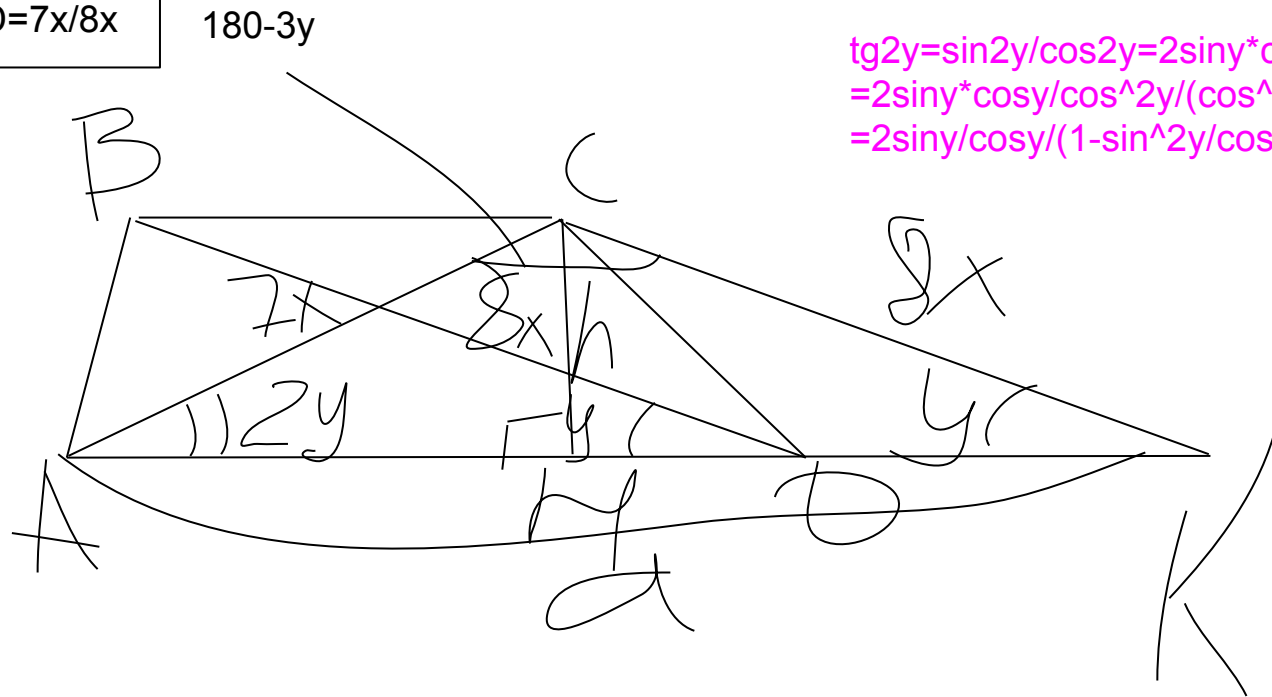


В трапеции ABCD сумма длин оснований BC и AD равна "а", диагонали связаны соотношением  $8AC=7BD$ , угол  $CAD=2$  угла  $BDA$ . Найти S трапеции

$$\frac{AC}{BD} = \frac{7}{8}$$

$$\frac{AC}{BD} = \frac{7x}{8x}$$



$$S = \sin 2y \cdot a \cdot \frac{7x}{2} = \sin y \cdot \cos y \cdot 49 \cdot a^2 / 15 = \sqrt{33} \cdot 4 \cdot a^2 / 15 = 4a^2 \sqrt{33} / 15$$

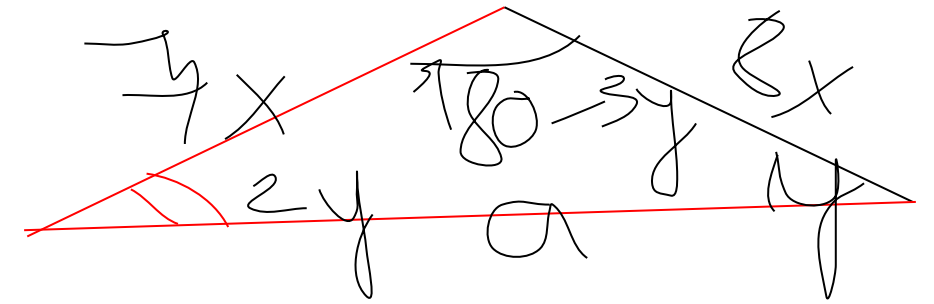
Ответ:  $4a^2 \sqrt{33} / 15$

$$1 + \operatorname{tg}^2 x = 1 + \frac{\sin^2 x}{\cos^2 x} = \frac{1}{\cos^2 x}$$

$$\operatorname{tg} 2y = \frac{\sin 2y}{\cos 2y} = \frac{2 \sin y \cdot \cos y}{\cos^2 y - \sin^2 y} =$$

$$= \frac{2 \sin y \cdot \cos y / \cos^2 y}{(\cos^2 y - \sin^2 y) / \cos^2 y} =$$

$$= \frac{2 \sin y / \cos y}{(1 - \sin^2 y / \cos^2 y)}$$



$$3 \sin x - 4 \sin^3(x) = \sin 3x$$

$$\frac{7x}{\sin y} = \frac{8x}{\sin 2y} = \frac{a}{\sin(180-3y)} = \frac{a}{\sin 3y}$$

$$\sin(180-3y) = \sin 180 \cdot \cos 3y - \sin 3y \cdot \cos 180 = \sin 3y$$

$$\frac{7x}{\sin y} = \frac{8x}{\sin 2y}$$

$$\frac{7}{\sin y} = \frac{8}{\sin 2y}$$

$$\frac{7 \sin 2y}{\sin y} = 8$$

$$14 \cos y = 8$$

$$\cos y = \frac{4}{7}$$

$$\sin y = \sqrt{1 - \frac{16}{49}} = \frac{\sqrt{33}}{7}$$

$$\frac{7x}{\sin y} = \frac{a}{\sin 3y}$$

$$x = \frac{\sin y \cdot a}{7 \sin 3y} = \frac{\sin y \cdot a}{7(3 \sin y - 4 \sin^3 y)} =$$

$$= \frac{a}{7(3 - 4 \sin^2 y)} = \frac{a}{(21 - 132/7)} = \underline{\underline{\frac{7a}{15}}}$$