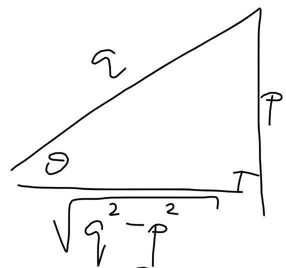
5/

$\sin\theta = \frac{p}{q}$

θ is obtuse $\Rightarrow$ Q2

$p > 0, q > 0$



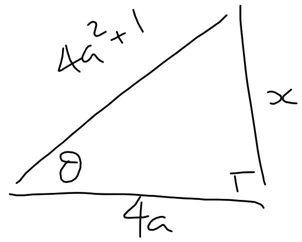
$\cos\theta = -\frac{\sqrt{q^2-p^2}}{q}$ $\tan\theta = -\frac{p}{\sqrt{q^2-p^2}}$

9

$\sec\theta = a + \frac{1}{4a}$

$= \frac{4a^2+1}{4a}$

prove $\sec\theta + \tan\theta = 2a$ or $\frac{1}{2a}$



$x^2 = \sqrt{(4a^2+1)^2 - (4a)^2}$

$= \sqrt{16a^4 + 8a^2 + 1 - 16a^2}$

$= \sqrt{16a^4 - 8a^2 + 1}$

$= \sqrt{(4a^2-1)^2}$

$x = 4a^2 - 1$ or $1 - 4a^2$

$x = 4a^2 - 1$

$\sec\theta + \tan\theta$

$= \frac{4a^2+1}{4a} + \frac{4a^2-1}{4a}$

$= \frac{8a^2}{4a}$

$= 2a$

$x = 1 - 4a^2$

$\sec\theta + \tan\theta = \frac{4a^2+1}{4a} + \frac{1-4a^2}{4a}$

$= \frac{2}{4a}$

$= \frac{1}{2a}$

$\therefore \sec\theta + \tan\theta$

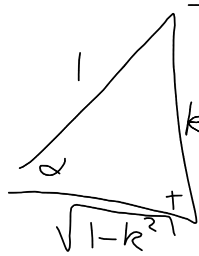
$= 2a$ or $\frac{1}{2a}$

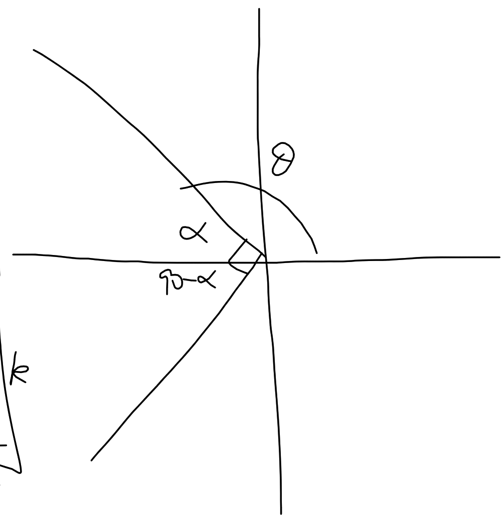
8/ $\sin\theta = k$

θ is obtuse

$\tan(\theta + 90^\circ)$

$\sin\theta = \sin\alpha = k$





$\tan(\theta + 90^\circ)$

$= \tan(90 - \alpha)$

$= \cot\alpha$

$= \dfrac{\sqrt{1-k^2}}{k}$