If $\tan x = -6$ and $\csc x < 0$, find the values of the following trigonometric values **using identities**.
DO NOT USE TRIANGLES.

$\sin x =$ $\qquad$ $\cos x =$ $\qquad$ $\tan x =$ $\qquad$ $\sec x =$ $\qquad$ $\cot x =$

If $\cot x = -8$ and $\sec x < 0$, find the values of the following trigonometric values **using identities**.
DO NOT USE TRIANGLES.

$\sin x =$ $\qquad$ $\cos x =$ $\qquad$ $\tan x =$ $\qquad$ $\csc x =$ $\qquad$ $\sec x =$

Use the trigonometric substitution $x = 3\sec\theta$ to write the algebraic expression $\sqrt{4x^2 - 36}$ as a trigonometric function of θ, where $0 \le \theta < \dfrac{\pi}{2}$.

Use the trigonometric substitution $x = 2\tan\theta$ to write the algebraic expression $\sqrt{9x^2 + 36}$ as a trigonometric function of θ, where $0 \le \theta < \dfrac{\pi}{2}$.

Prove the identity $\dfrac{1 - \cos x}{1 + \cos x} = (\cot x - \csc x)^2$.

Prove the identity $\dfrac{\csc x + \cot x}{\tan x + \sin x} = \cot x \csc x$.