Find a family of curves making an angle of \( \pi/4 \) with the curves of the family:

\[ y = \frac{1}{x + c} \]

As you recall, \( \tan(\phi_2 - \phi_1) = \frac{\tan\phi_2 - \tan\phi_1}{1 + \tan\phi_2 \tan\phi_1} \)

In this problem, \( \phi_2 - \phi_1 = \pi/4 \), so \( \tan(\phi_2 - \phi_1) = 1 \)

\( \tan \phi_2 = (y_{\text{old}})' \) and \( \tan \phi_1 = (y_{\text{new}})' \) which we will call simply \( y' \).

Now, \( (y_{\text{old}})' = \left( \frac{1}{x + c} \right)' = \frac{-1}{(x + c)^2} = -y^2 \)

So, we have: \( 1 = \frac{-y^2 - y'}{1 + (-y^2)y'} \)

This gives us:

\[ 1 + (-y^2)y' = -y^2 - y' \]

\[ \frac{dy}{dx} = y' = \frac{y^2 + 1}{y^2 - 1} \]

\[ \int \frac{y^2 - 1}{y^2 + 1} \, dy = \int dx \]

\[ \int \left( 1 - \frac{2}{y^2 + 1} \right) \, dy = \int dx \]

\[ y - 2\arctan y = x + c \]

The family of curves is given implicitly by: \( y - 2\arctan y = x + c \)