7. Given: \( \tan \theta = \frac{3}{2}, \pi < \theta < \frac{3\pi}{2} \).

Draw a triangle with \( \theta \) and the opposite side marked 3 and the adjacent side marked 2 and find the third side. 

\[ \frac{\sqrt{13}}{2} \] 

\( \tan (\frac{\pi}{2} - \theta) \). In the triangle above, locate the angle \( \pi/2 - \theta \), it is the complementary angle. 

\[ \tan (\frac{\pi}{2} - \theta) = \frac{\sqrt{13}}{2} \] 

\( \sin (\theta) \). Use \( \pi < \theta < \frac{3\pi}{2} \) to determine the sign \( \pm \). 

\[ \sin (\theta) = \frac{3\sqrt{13}}{13} \] 

\( \cos (\theta) \). 

\[ \cos (\theta) = \frac{2\sqrt{13}}{13} \] 

\( \sin (2\theta) \). Use the double-angle formula 

\[ \sin (2\theta) = 2 \sin \theta \cos \theta \] 

\[ \sin (2\theta) = \frac{6\sqrt{13}}{13} \] 

\( \cos (\theta/2) \). Use the half-angle formula 

\[ \cos (\theta/2) = \pm \frac{\sqrt{1+\cos \theta}}{2} \] 

To determine the sign \( \pm \), find the quadrant for \( \theta/2 \). 

To find the quadrant for \( \theta/2 \), divide \( \pi < \theta < \frac{3\pi}{2} \) by 2.

Your answer should not have a fraction of fractions. You may leave \( \sqrt{13} \) in the denominator. 

\[ \cos (\theta/2) = \frac{3}{\sqrt{13}} \]