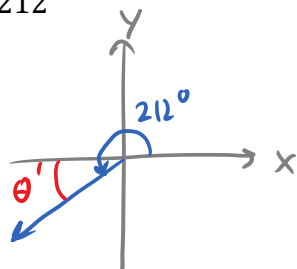


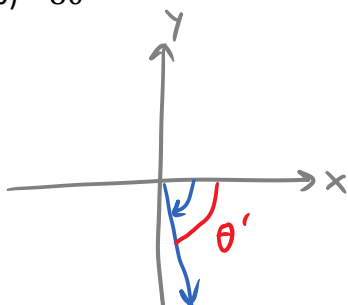
1. Find the reference angle for the following angles.

a)  $212^\circ$

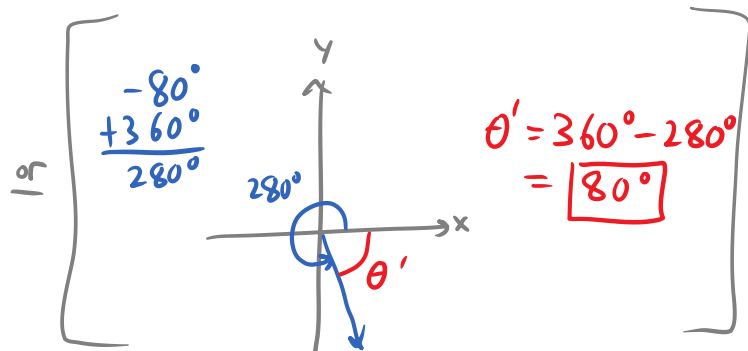


$$\theta' = 212^\circ - 180^\circ = \boxed{32^\circ}$$

b)  $-80^\circ$

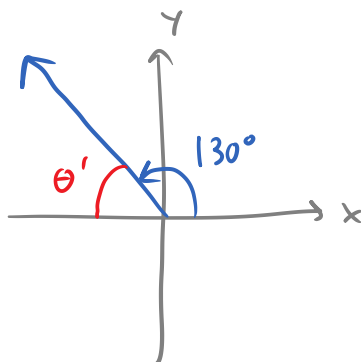


$$\theta' = \boxed{80^\circ}$$



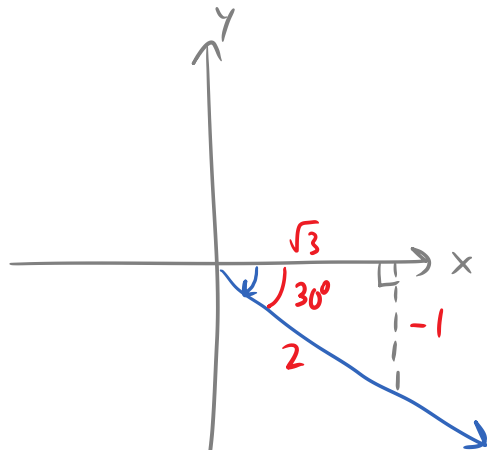
c)  $850^\circ$

$$\begin{array}{r} 850^\circ \\ -720^\circ \\ \hline 130^\circ \end{array}$$



$$\theta' = 180^\circ - 130^\circ = \boxed{50^\circ}$$

2. Find the values of the six trig functions for  $-30^\circ$ .



$$\sin(-30^\circ) = -\frac{1}{2}$$

$$\csc(-30^\circ) = -2$$

$$\cos(-30^\circ) = \frac{\sqrt{3}}{2}$$

$$\sec(-30^\circ) = \frac{2}{\sqrt{3}}$$

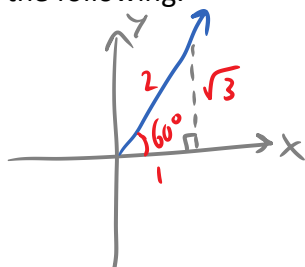
$$\tan(-30^\circ) = -\frac{1}{\sqrt{3}}$$

$$\cot(-30^\circ) = -\sqrt{3}$$

3. Find exact values for the following.

a)  $\cos 420^\circ$

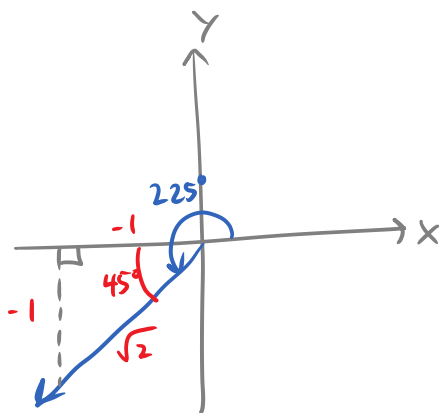
$$\begin{array}{r} 420^\circ \\ -360^\circ \\ \hline 60^\circ \end{array}$$



$$\cos 420^\circ = \cos 60^\circ = \boxed{\frac{1}{2}}$$

b)  $\csc(-495^\circ)$

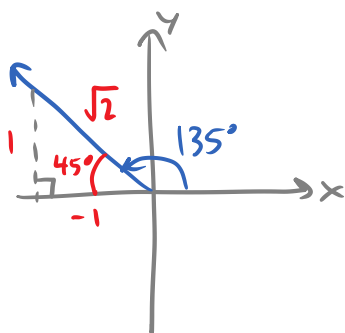
$$\begin{array}{r} -495^\circ \\ + 720^\circ \\ \hline 225^\circ \end{array}$$



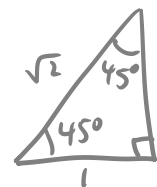
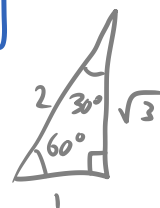
$$\begin{aligned} \csc(-495^\circ) &= \csc 225^\circ \\ &= \frac{\sqrt{2}}{-1} \\ &= \boxed{-\sqrt{2}} \end{aligned}$$

4. Evaluate. (Recall:  $\cot^2 135^\circ = (\cot 135^\circ)^2$ )

$$\cot^2 135^\circ - \sin 30^\circ + 4 \tan 45^\circ = (-1)^2 - \frac{1}{2} + 4(1) = 1 - \frac{1}{2} + 4 = \boxed{\frac{9}{2}}$$



$$\begin{aligned} \cot 135^\circ &= \frac{-1}{1} = -1 \\ \sin 30^\circ &= \frac{1}{2} \\ \tan 45^\circ &= \frac{1}{1} = 1 \end{aligned}$$



5. Use a calculator to find a decimal approximation for each value. Give as many digits as your calculator displays. (Note: be sure to set your calculator for degree mode!)

a)  $\sin 97.978^\circ \approx \boxed{0.990321434}$

b)  $\sec 36^\circ = \frac{1}{\cos 36^\circ} \approx \boxed{1.236067977}$

c)  $\tan 41^\circ 15' = \tan 41.25^\circ \approx \boxed{0.876976463}$

$$\frac{15'}{1} \times \frac{1^\circ}{60'} = 0.25^\circ$$

d)  $\cot(-125^\circ) = \frac{1}{\tan(-125^\circ)} \approx \boxed{0.700207538}$