Name **Key**   ID: 1

Exact Values (Both Methods)
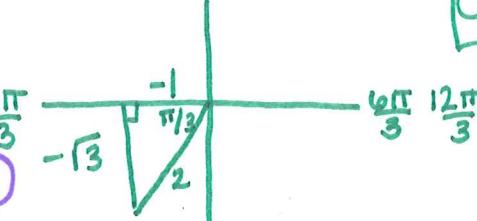
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Find the exact value of each trigonometric function using the triangle method.

1) $\sec \dfrac{5\pi}{6} = \dfrac{h}{a}$
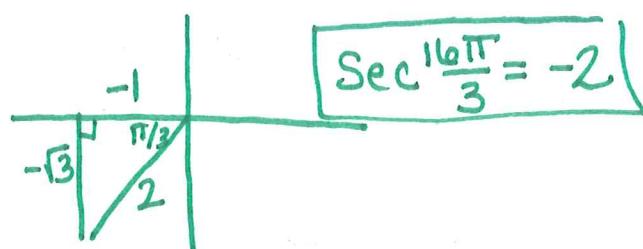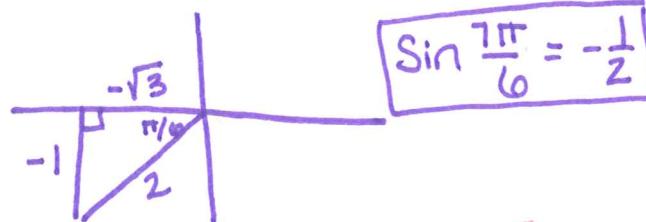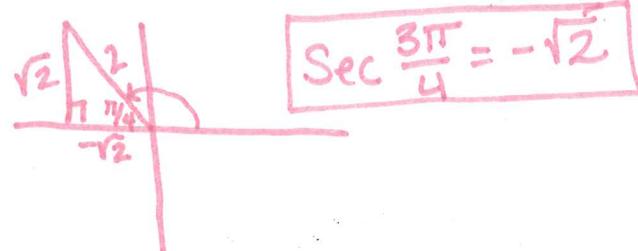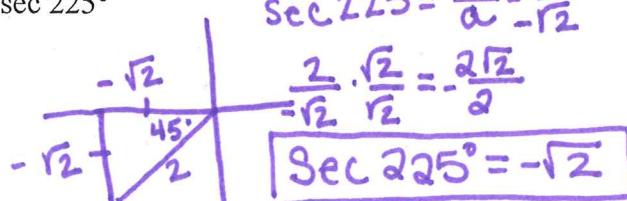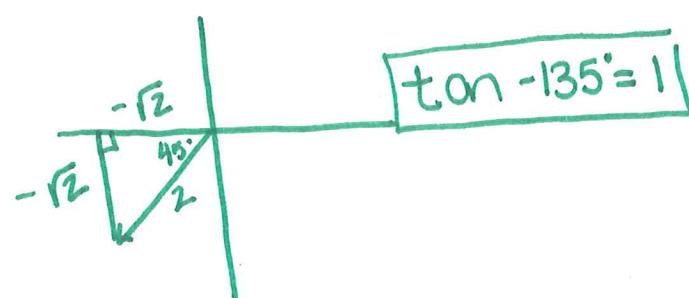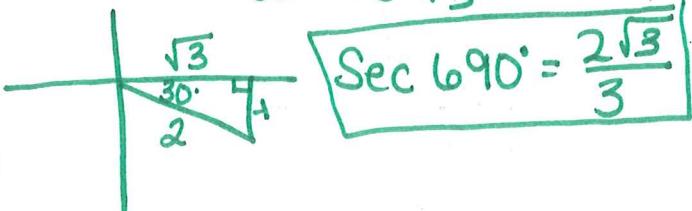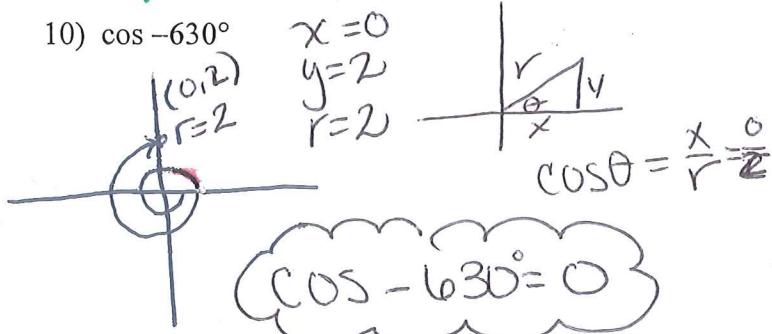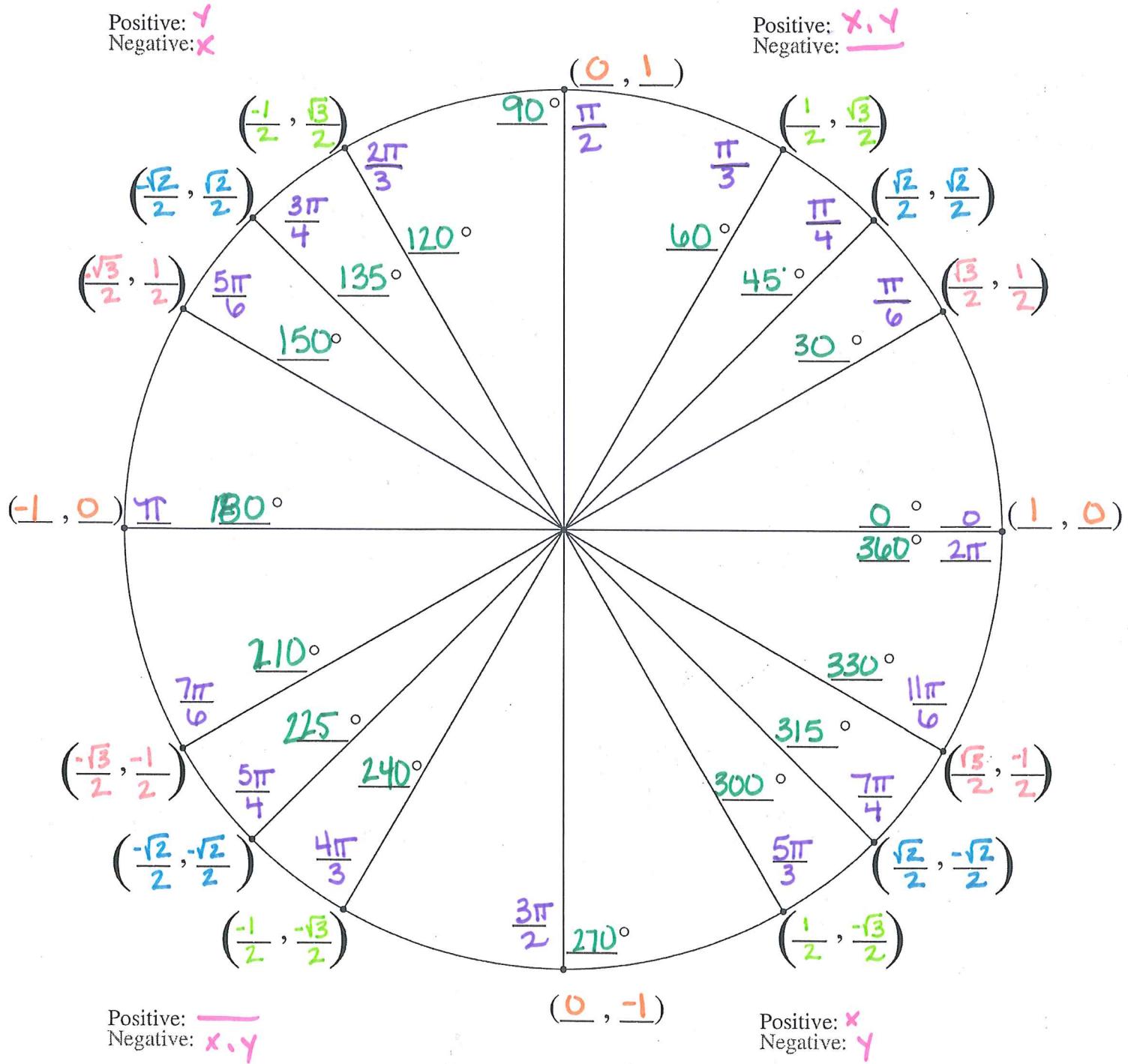
$\dfrac{h}{a} = \dfrac{1}{-\frac{\sqrt{3}}{2}}$

$\dfrac{1}{1} \cdot -\dfrac{2}{\sqrt{3}} = -\dfrac{2}{\sqrt{3}}\dfrac{\sqrt{3}}{\sqrt{3}} = \dfrac{-2\sqrt{3}}{3}$

$\boxed{\text{Sec } \dfrac{5\pi}{6} = \dfrac{-2\sqrt{3}}{3}}$

2) $\cot \dfrac{16\pi}{3} = \dfrac{-1}{-\sqrt{3}} \cdot \dfrac{\sqrt{3}}{\sqrt{3}} =$

$\boxed{\text{Cot } \dfrac{16\pi}{3} = \dfrac{\sqrt{3}}{3}}$

3) $\sin 3\pi = \dfrac{y}{r}$

$(-2,0)$
$r = 2$
$x = -2$
$y = 0$

$\dfrac{y}{r} = \dfrac{0}{2}$

$\boxed{\text{Sin } 3\pi = 0}$

4) $\sin \dfrac{7\pi}{6} = \dfrac{o}{h} = -\dfrac{1}{2}$

$\boxed{\text{Sin } \dfrac{7\pi}{6} = -\dfrac{1}{2}}$

5) $\sec \dfrac{16\pi}{3} = \dfrac{h}{a} = \dfrac{2}{-1}$

$\boxed{\text{Sec } \dfrac{16\pi}{3} = -2}$

6) $\sec \dfrac{3\pi}{4} = \dfrac{h}{a} = \dfrac{2}{-\sqrt{2}} \cdot \dfrac{\sqrt{2}}{\sqrt{2}}$

$\boxed{\text{Sec } \dfrac{3\pi}{4} = -\sqrt{2}}$

7) $\sec 225°$

$\text{Sec } 225 = \dfrac{h}{a} = \dfrac{2}{-\sqrt{2}}$

$= \dfrac{2}{-\sqrt{2}} \cdot \dfrac{\sqrt{2}}{\sqrt{2}} = -\dfrac{2\sqrt{2}}{2}$

$\boxed{\text{Sec } 225° = -\sqrt{2}}$

8) $\sec 690° = \dfrac{h}{a} = \dfrac{2}{\sqrt{3}} \cdot \dfrac{\sqrt{3}}{\sqrt{3}}$

$\boxed{\text{Sec } 690° = \dfrac{2\sqrt{3}}{3}}$

9) $\tan -135° = \dfrac{-\sqrt{2}}{-\sqrt{2}} = 1$

$\boxed{\text{tan } -135° = 1}$

10) $\cos -630°$

$x = 0$
$y = 2$
$(0,2)$ $r = 2$
$r = 2$

$\cos\theta = \dfrac{x}{r} = \dfrac{0}{2}$

$\boxed{\text{COS } -630° = 0}$

Fill in The Unit Circle

Positive: Y
Negative: X

Positive: X, Y
Negative: ___

$(0, 1)$

$90°$ $\frac{\pi}{2}$

$\left(\frac{-1}{2}, \frac{\sqrt{3}}{2}\right)$ $\frac{2\pi}{3}$

$\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$

$\frac{\pi}{3}$

$\left(\frac{-\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$ $\frac{3\pi}{4}$ $120°$

$\frac{\pi}{4}$ $\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

$60°$

$\left(\frac{-\sqrt{3}}{2}, \frac{1}{2}\right)$ $\frac{5\pi}{6}$ $135°$

$45°$ $\frac{\pi}{6}$ $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

$150°$

$30°$

$(-1, 0)$ π $180°$

$\frac{0°}{360°}$ $\frac{0}{2\pi}$ $(1, 0)$

$210°$

$330°$

$\frac{7\pi}{6}$

$\frac{11\pi}{6}$

$225°$

$315°$

$\left(\frac{-\sqrt{3}}{2}, \frac{-1}{2}\right)$ $\frac{5\pi}{4}$ $240°$

$300°$ $\frac{7\pi}{4}$ $\left(\frac{\sqrt{3}}{2}, \frac{-1}{2}\right)$

$\left(\frac{-\sqrt{2}}{2}, \frac{-\sqrt{2}}{2}\right)$ $\frac{4\pi}{3}$

$\frac{5\pi}{3}$ $\left(\frac{\sqrt{2}}{2}, \frac{-\sqrt{2}}{2}\right)$

$\left(\frac{-1}{2}, \frac{-\sqrt{3}}{2}\right)$ $\frac{3\pi}{2}$ $270°$

$\left(\frac{1}{2}, \frac{-\sqrt{3}}{2}\right)$

$(0, -1)$

Positive: ___
Negative: X, Y

Positive: X
Negative: Y

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Find the exact value of each trigonometric function using the unit circle. List the ordered pair you used for each question and your final answer.

11) $\cot \dfrac{5\pi}{2}$ $(0, 1)$
@ 90°

$\boxed{\cot \dfrac{5\pi}{2} = 0}$

12) $\sin -\dfrac{23\pi}{4}$ $\left(\dfrac{\sqrt{2}}{2}, \dfrac{\sqrt{2}}{2}\right)$
Same as $\dfrac{\pi}{4}$

$\boxed{\sin -\dfrac{23\pi}{4} = \dfrac{\sqrt{2}}{2}}$

13) $\cot \dfrac{21\pi}{4}$
@ $\dfrac{5\pi}{4}$ $\left(-\dfrac{\sqrt{2}}{2}, -\dfrac{\sqrt{2}}{2}\right)$

$\boxed{\cot \dfrac{21\pi}{4} = 1}$

14) $\sec \dfrac{5\pi}{4}$
$\left(-\dfrac{\sqrt{2}}{2}, -\dfrac{\sqrt{2}}{2}\right)$

$\boxed{\sec \dfrac{5\pi}{4} = -\sqrt{2}}$

15) $\sec \dfrac{21\pi}{4}$ $\left(-\dfrac{\sqrt{2}}{2}, -\dfrac{\sqrt{2}}{2}\right)$
$\dfrac{5\pi}{4}$

$\boxed{\sec \dfrac{21\pi}{4} = -\sqrt{2}}$

16) $\csc -\dfrac{2\pi}{3}$ $\left(-\dfrac{1}{2}, -\dfrac{\sqrt{3}}{2}\right)$ $\boxed{\csc -\dfrac{2\pi}{3} = -\dfrac{2\sqrt{3}}{2}}$

17) $\cos \dfrac{5\pi}{3}$ $\left(\dfrac{1}{2}, -\dfrac{\sqrt{3}}{2}\right)$

$\boxed{\cos \dfrac{5\pi}{3} = \dfrac{1}{2}}$

18) $\sec \dfrac{11\pi}{2}$ $\Rightarrow \dfrac{1}{0}$
@ $\dfrac{3\pi}{2}$ $(0, -1)$ $\boxed{\sec \dfrac{11\pi}{2} = \text{undefined}}$

19) $\sin \dfrac{11\pi}{3}$ $\Rightarrow$
@ $\dfrac{5\pi}{3}$ $\left(\dfrac{1}{2}, -\dfrac{\sqrt{3}}{2}\right)$

$\boxed{\sin \dfrac{11\pi}{3} = -\dfrac{\sqrt{3}}{2}}$

20) $\cot \dfrac{16\pi}{3}$ @ $\dfrac{4\pi}{3}$ $\left(-\dfrac{1}{2}, -\dfrac{\sqrt{3}}{2}\right)$

$\boxed{\cot \dfrac{16\pi}{3} = \dfrac{\sqrt{3}}{3}}$

21) $\csc 120°$ $\left(-\dfrac{1}{2}, \dfrac{\sqrt{3}}{2}\right)$

$\boxed{\csc 120° = \dfrac{2\sqrt{3}}{3}}$

22) $\csc -675°$
@ 45°
$\left(\dfrac{\sqrt{2}}{2}, \dfrac{\sqrt{2}}{2}\right)$ $\boxed{\csc -675° = \sqrt{2}}$

23) $\cos 630°$
@ 270°

$(0, -1)$ $\boxed{\cos 630° = 0}$

24) $\cot -1020°$ $\Rightarrow$ $\boxed{\cot -1020° = \dfrac{\sqrt{3}}{2}}$
@ 60°
$\left(\dfrac{1}{2}, \dfrac{\sqrt{3}}{2}\right)$

25) $\cot -750° =$
@ 330°
$\left(\dfrac{\sqrt{3}}{2}, -\dfrac{1}{2}\right)$ $\boxed{\cot -750° = -\sqrt{3}}$

26) $\cot -930°$ $\left(-\dfrac{\sqrt{3}}{2}, \dfrac{1}{2}\right)$

$\boxed{\cot -930° = -\sqrt{3}}$

27) $\cot -210°$ $\left(-\dfrac{\sqrt{3}}{2}, \dfrac{1}{2}\right)$

$\boxed{\cot -210° = -\sqrt{3}}$

28) $\cos 300°$ $\left(\dfrac{\sqrt{3}}{2}, \dfrac{1}{2}\right)$

$\boxed{\cos 300° = \dfrac{1}{2}}$

29) $\sec -540°$
@ 180° recip. -1 $\boxed{\sec -540° = -1}$
$(-1, 0)$

30) $\sec -480°$
@ 240° $\boxed{\sec -480° = -2}$
$\left(-\dfrac{1}{2}, -\dfrac{\sqrt{3}}{2}\right)$

Find the exact value of the following.

31) $\sin(45°) \cdot \cos(180°)$

$\dfrac{\sqrt{2}}{2} \cdot -1 = \boxed{-\dfrac{\sqrt{2}}{2}}$

32) $\tan(\pi/4) - \sin(3\pi/2)$

$\tan \dfrac{\pi}{4} = 1$ $1 - -1 = 2$

$\sin \dfrac{3\pi}{2} = -1$

33) $(\sec \pi/4)^2 + \csc \pi/2$

$\sec \dfrac{\pi}{4} = \dfrac{2}{\sqrt{2}} \cdot \dfrac{\sqrt{2}}{2} = \dfrac{2\sqrt{2}}{2}$

$\sec \dfrac{\pi}{4} = \sqrt{2}$ $(\sqrt{2})^2 + 1$

$\csc \pi/2 = 1$ $= 3$

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