PreCalc B Name KEY ID: 1

6.1B Practice

Date _____

Convert each degree measure into radians. Leave answers in fraction form.

1) $-60° \left(\frac{\pi}{180}\right) =$ $-\frac{\pi}{3}$

2) $120° \left(\frac{\pi}{180}\right) =$ $\frac{2\pi}{3}$

3) $150° \left(\frac{\pi}{180}\right) =$ $\frac{5\pi}{6}$

4) $225° \left(\frac{\pi}{180}\right) =$ $\frac{5\pi}{4}$

5) $210° \left(\frac{\pi}{180}\right) =$ $\frac{7\pi}{6}$

6) $315° \left(\frac{\pi}{180}\right) =$ $\frac{7\pi}{4}$

TIP FOR ROUNDING RADIANS: Use the follow #'s to reduce fractions - 30, 45, 60, 90

Use (math) 1: ▶ FRAC

Convert each radian measure into degrees.

7) $-\frac{3\pi}{4} \left(\frac{180°}{\pi}\right) =$ $-135°$

8) $-\frac{3\pi}{2} \left(\frac{180°}{\pi}\right) =$ $-270°$

9) $-\frac{2\pi}{3} \left(\frac{180°}{\pi}\right) =$ $-120°$

10) $\frac{\pi}{4} \left(\frac{180°}{\pi}\right) =$ $45°$

11) $\frac{7\pi}{6} \left(\frac{180°}{\pi}\right) =$ $210°$

12) $\frac{5\pi}{6} \left(\frac{180°}{\pi}\right) =$ $150°$

Remember to use π on Calc (2ND) π (^)

Find the length of each arc. Round your answers to the nearest tenth. Remember to include the correct units.

13) $r = 6$ yd, $\theta = 285°$

29.8 yd

$S = 285°\left(\frac{\pi}{180°}\right) \cdot 6$

$S \approx 29.8$ yds

14) $r = 5$ ft, $\theta = 45°$

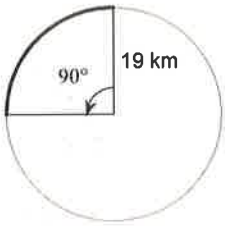
3.9 ft

$S = 45°\left(\frac{\pi}{180°}\right) \cdot 5$

$S \approx 3.9$ ft

Find the length of each arc. Round your answers to the nearest tenth.

15)

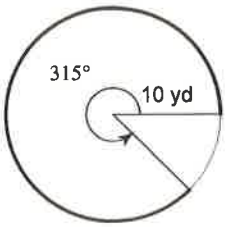


29.8 km

$S = 90°\left(\frac{\pi}{180°}\right)\cdot 19$

$S \approx 29.8\text{KM}$

16)



55.0 yd

$S = 315°\left(\frac{\pi}{180°}\right)\cdot 10$

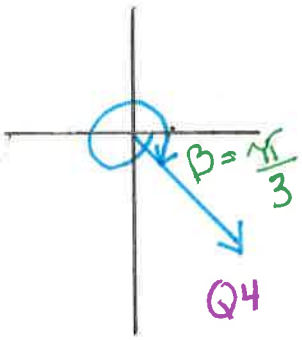
$S = 55.0\text{yds}$

Sketch the Graph. Label the reference angle (B). Find the exact value of each trigonometric function. Tips: ① (COS, SIN) ② POSITIVE "ALL STUDENTS TAKE CALCULUS"

Negative angles....

17) $\cos -\frac{7\pi}{3} = \frac{x}{r}$

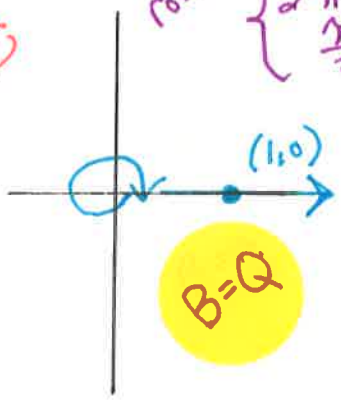
$+\frac{1}{2}$



18) $\cos -2\pi = \frac{x}{r} = \frac{1}{1}$

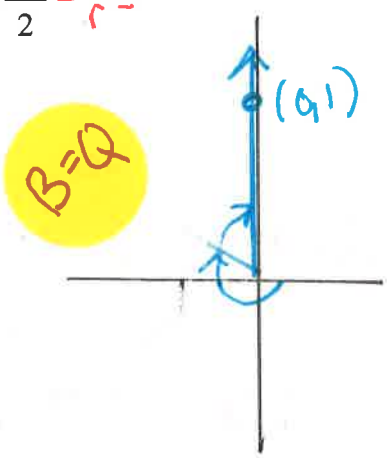
1

rotations: $\pi = 180°$, $2\pi = 360°$, $\frac{\pi}{2} = 90°$



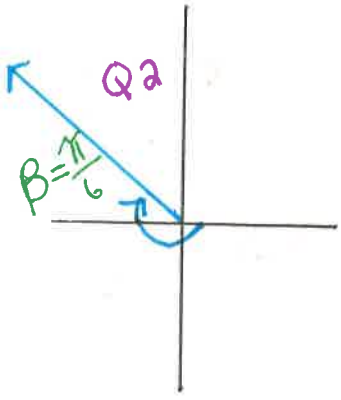
19) $\sin -\frac{3\pi}{2} = \frac{y}{r} =$

1



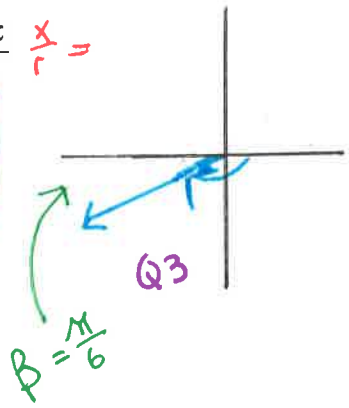
20) $\cos -\frac{7\pi}{6} = \frac{x}{r}$

$-\frac{\sqrt{3}}{2}$



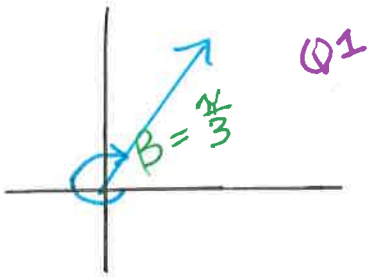
21) $\cos -\frac{5\pi}{6}$ $\frac{x}{r}=$

$-\frac{\sqrt{3}}{2}$



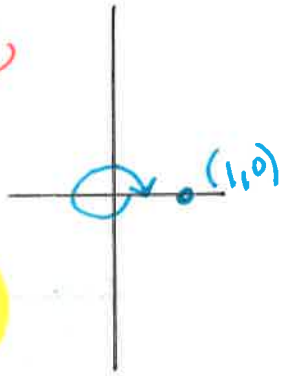
22) $\sin -\frac{5\pi}{3}$ $\frac{y}{r}$

$+\frac{\sqrt{3}}{2}$



23) $\tan -2\pi = \frac{y}{x} = \frac{0}{1}$

0

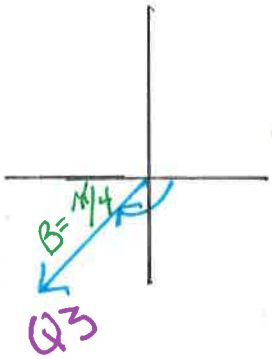


B=Q

24) $\tan -\frac{3\pi}{4} = \frac{y}{x}$

$\frac{\sqrt{2}}{2} \div \frac{\sqrt{2}}{2} =$

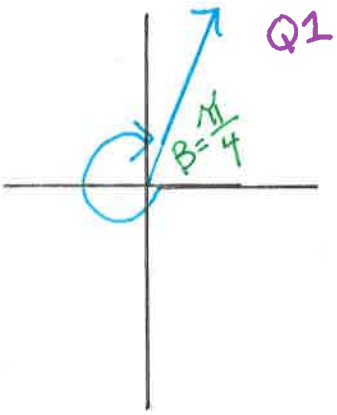
+1



25) $\tan -\frac{7\pi}{4} = \frac{y}{x}$

$\frac{\sqrt{2}}{2} \div \frac{\sqrt{2}}{2} =$

+1

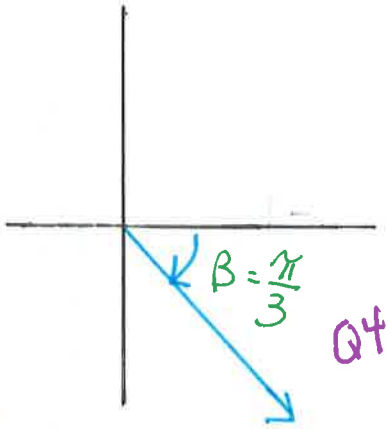


26) $\tan -\frac{\pi}{3} = \frac{y}{x}$

$\frac{\sqrt{3}}{2} \div \frac{1}{2} =$

$\frac{\sqrt{3}}{2} \cdot \frac{2}{1} =$

$\sqrt{3}$

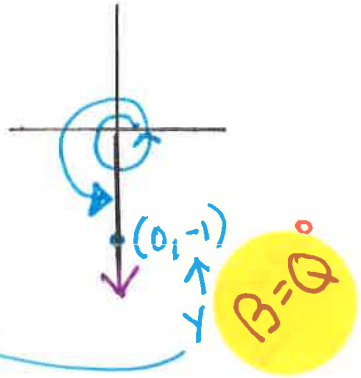


QUADRANT DETERMINES SIGN

Angles greater than 1 rotation... 1 ROTATION = 2π

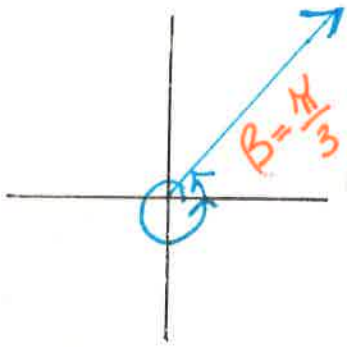
27) $\sin\frac{7\pi}{2}$ $\quad \frac{7\pi}{2} - \frac{4\pi}{2} = \frac{3\pi}{2}$

-1



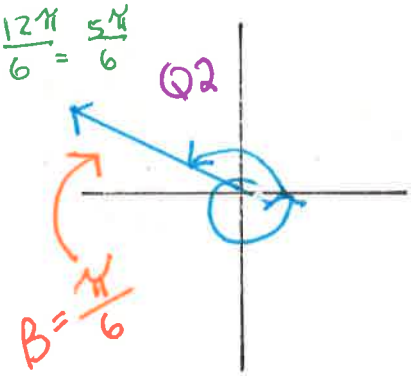
28) $\sin\frac{7\pi}{3}$ $\quad \frac{7\pi}{3} - \frac{6\pi}{3} = \frac{\pi}{3}$

$+\frac{\sqrt{3}}{2}$



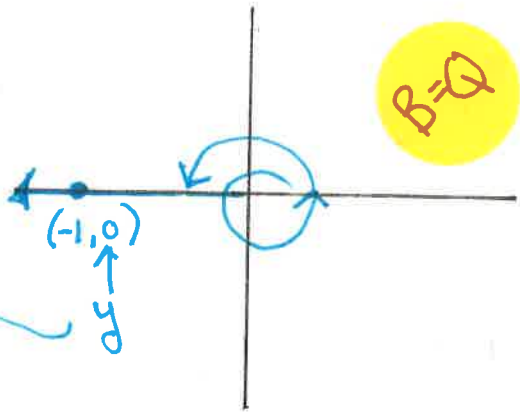
29) $\sin\frac{17\pi}{6}$ $\quad \frac{17\pi}{6} - \frac{12\pi}{6} = \frac{5\pi}{6}$

$+\frac{1}{2}$



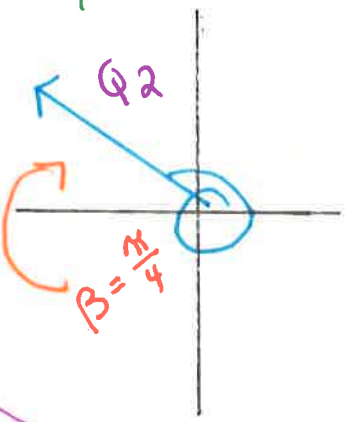
30) $\sin 3\pi$

0



31) $\tan\frac{11\pi}{4}$ $\quad \frac{11\pi}{4} - \frac{8\pi}{4} = \frac{3\pi}{4}$

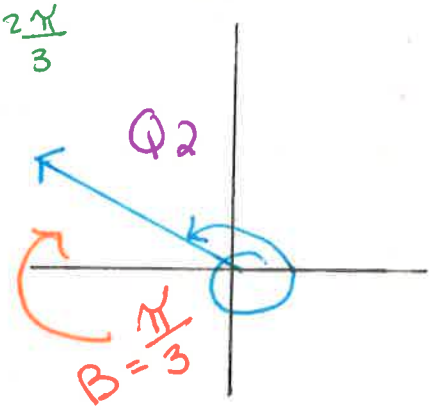
-1



$\frac{y}{x} = \frac{\sqrt{2}}{2} \div \frac{\sqrt{2}}{2} = 1$

32) $\tan\frac{8\pi}{3}$ $\quad \frac{8\pi}{3} - \frac{6\pi}{3} = \frac{2\pi}{3}$

$-\sqrt{3}$

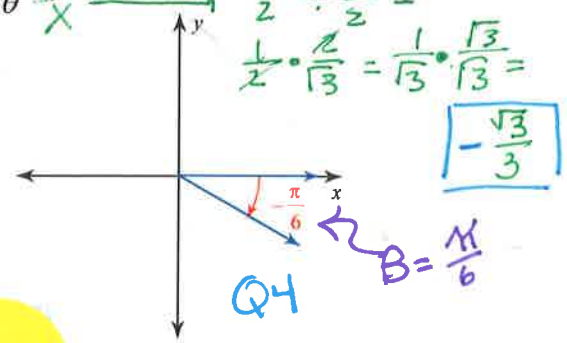


$\frac{y}{x} = \frac{\sqrt{3}}{2} \div \frac{1}{2} = \frac{\sqrt{3}}{1} \cdot \frac{2}{1} =$

Label the reference angle (B). Find the exact value of each trigonometric function.

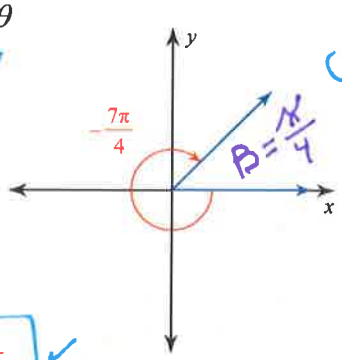
Positive and Negative angles with less than 1 rotation....

33) $\tan\theta = \frac{y}{x} = \frac{1}{2} \div \frac{\sqrt{3}}{2} = \frac{1}{2} \cdot \frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$



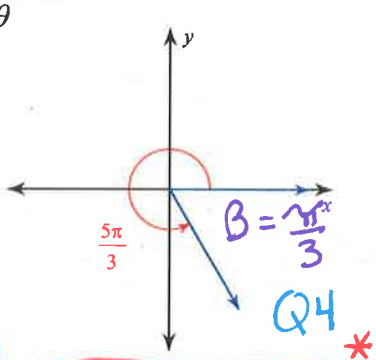
$-\frac{\sqrt{3}}{3}$

34) $\sin\theta$



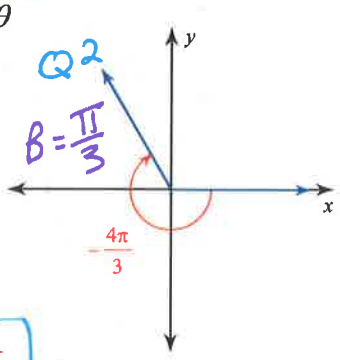
$+\frac{\sqrt{2}}{2}$ ✓

35) $\cos\theta$



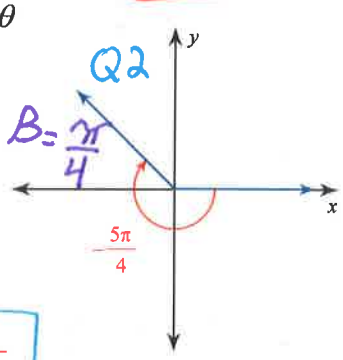
$+\frac{1}{2}$ ✓ ← Read directly from UNIT circle *

36) $\sin\theta$



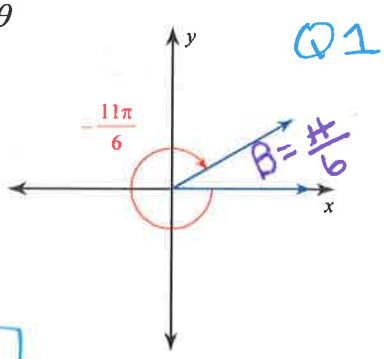
$+\frac{\sqrt{3}}{2}$ ✓

37) $\sin\theta$



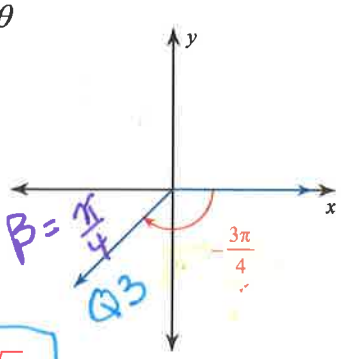
$+\frac{\sqrt{2}}{2}$ ✓

38) $\cos\theta$



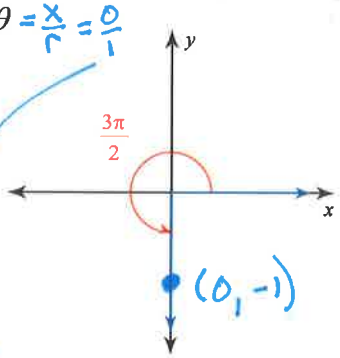
$+\frac{\sqrt{3}}{2}$ ✓

39) $\cos\theta$



$-\frac{\sqrt{2}}{2}$ ✓

40) $\cos\theta = \frac{x}{r} = \frac{0}{1}$



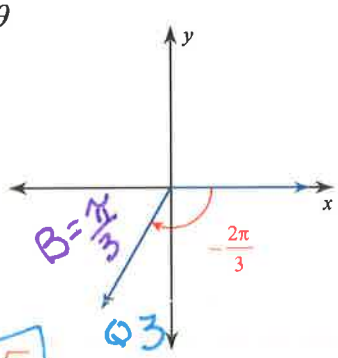
0

B = Q

* Tip

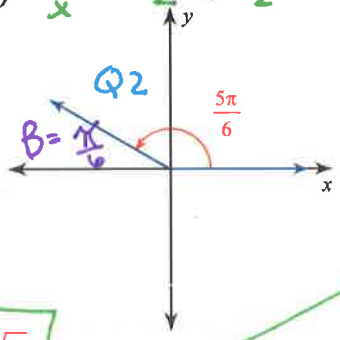
Read directly off Unit Circle when θ IS POSITIVE AND LESS THAN 1 ROTATION (2π)

41) $\sin\theta$



$-\frac{\sqrt{3}}{2}$

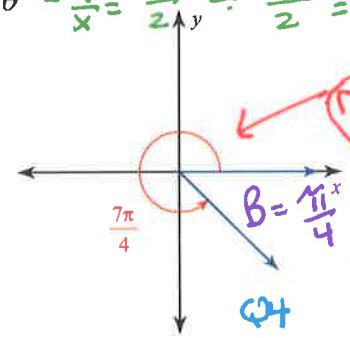
42) $\tan\theta = \frac{y}{x} = \frac{1}{2} \div \frac{\sqrt{3}}{2} = \frac{1}{2} \cdot \frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$



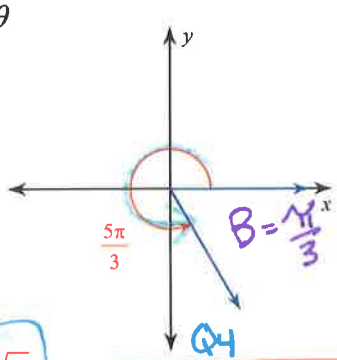
$-\frac{\sqrt{3}}{3}$

43) $\tan\theta = \frac{y}{x} = \frac{\sqrt{2}}{2} \div \frac{\sqrt{2}}{2} =$ -1

Read directly from UNIT circle

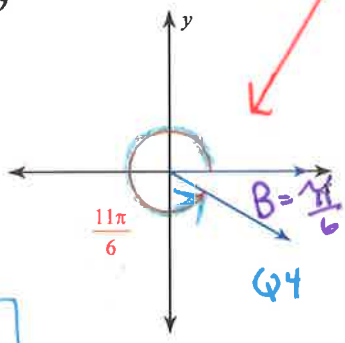


44) $\sin\theta$



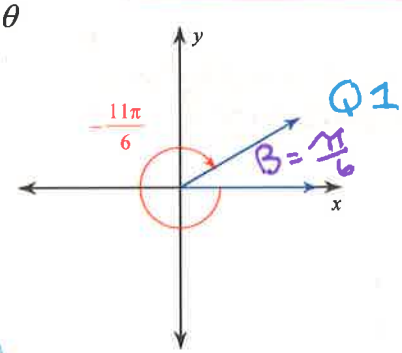
$-\frac{\sqrt{3}}{2}$ ← Read directly from UNIT circle

45) $\cos\theta$



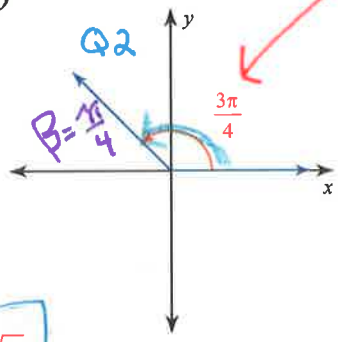
$+\frac{\sqrt{3}}{2}$

46) $\sin\theta$



$+\frac{1}{2}$

47) $\cos\theta$



$-\frac{\sqrt{2}}{2}$

48) $\tan\theta = \frac{y}{x} = \frac{\sqrt{3}}{2} \div \frac{1}{2} = \frac{\sqrt{3}}{2} \cdot \frac{2}{1} =$ $-\sqrt{3}$