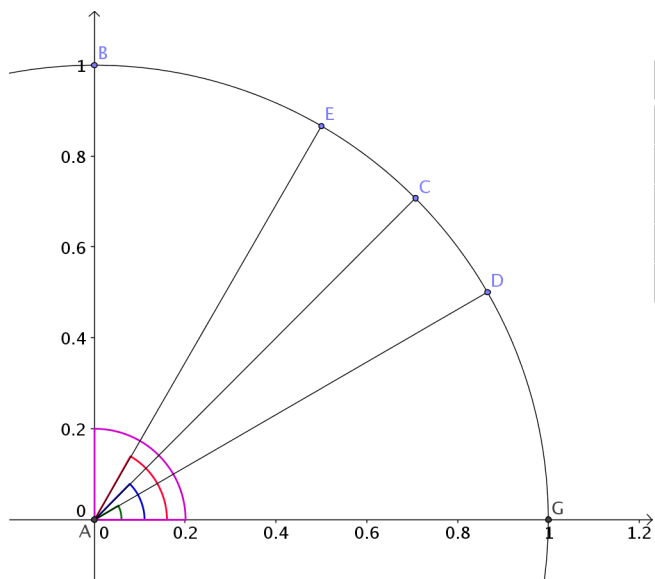


Name _____

Date _____

Please show ALL of your work if full or partial credit is desired. Communicating your solution is as important as stating your answer.

1. Label the special angles and their x- and y- coordinates for the first quadrant and fill out the table.



θ	$\sin(\theta)$	$\cos(\theta)$	$\tan(\theta)$

2. The $\sin(\theta) = \frac{2}{7}$. Define the following exactly:

- (a) $\cos(\theta)$
- (b) $\tan(\theta)$
- (c) $\csc(\theta)$
- (d) $\sec(\theta)$
- (e) $\cot(\theta)$

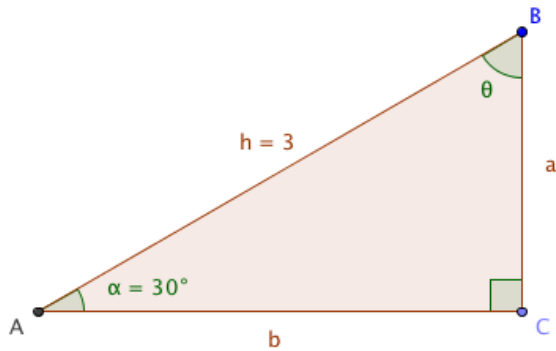
3. If $\theta = \frac{4\pi}{3}$, then find the following exactly:

- (a) $\cos(\theta)$
- (b) $\sin(\theta)$
- (c) $\tan(\theta)$

4. In a circle of radius 72 cm. an arc of 188 cm long subtends an angle of how many radians?
How many degrees?

5. Determine the amplitude, period and phase shift (if any) of $y = 3 \cos(2x - 2\pi)$.

6. Solve the right triangle, giving the missing sides and angles.



7. Find the exact values of:

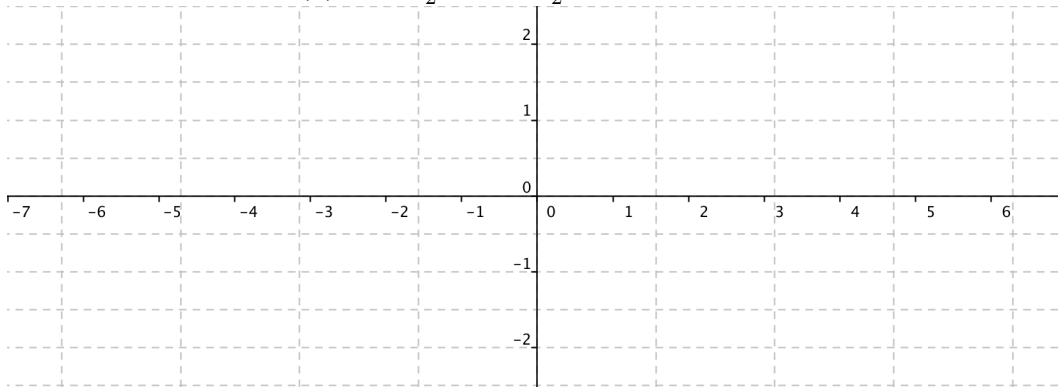
(a) $\sin(240^\circ)$

(b) $\tan(3\pi)$

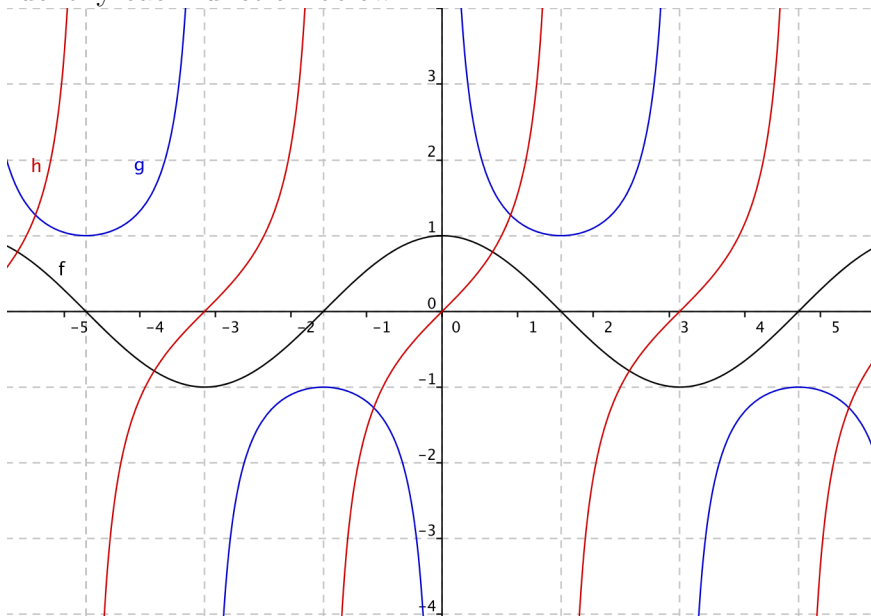
(c) $\cos\left(-\frac{5\pi}{3}\right)$

8. Use a reference angle to find the exact value of $\cos\left(\frac{7\pi}{6}\right)$. Do not use a calculator. Draw a picture on a unit circle.

9. Neatly graph $y = \sin(\theta)$ for $-\frac{\pi}{2} \leq \theta \leq \frac{3\pi}{2}$. Plot and label at least 8 points.



10. Identify each function below.



11. The $\sin(\theta) = \frac{1}{4}$ in quadrant II. Find the EXACT values of the other five functions.

12. The $\cos(\theta) = -\frac{8}{9}$ in quadrant III. Find the value of θ to the nearest hundredth of a radian.

13. An amplifying tower is situated due east of a radio station. A receiver is 15 km north of the amplifying tower. From the receiver, the bearing to the station is $S35^{\circ}45'W$. How far is the amplifying tower from the station?

14. Gary's bicycle has wheels with a 700mm diameter. If he is traveling at 40 kmph how many revolutions does the wheel make in 15 seconds?

15. What is the sine?