

Review

November-10-13 7:43 PM

MCR

- ① For the angle 945° state
- the principal angle
 - the related acute angle
 - two other co-terminal angles
 - the ratio value of $\sec 945^\circ$
 - an equivalent ratio to d) using an angle in quadrant I and another in quadrant II
 - at least one point that lies on the terminal arm of the rotation angle 945°

- ② Simplify each expression. Do not use a calculator.

a) $\sin 30^\circ + \cos 60^\circ$ b) $\tan 45^\circ + \tan 225^\circ$ c) $\sin 240^\circ + \cos 300^\circ$

- ③ Solve each equation for $0^\circ \leq \theta \leq 360^\circ$. *→ replace all x angles as θ for less confusion.*

a. $\cos x = 0$ b. $2 \sin x - 1 = 0$ c. $\tan x = -1$

d. $\sqrt{2} \sin x = 1$ e. $2 \cos x - 3 = 0$ f. $2 \sin x + \sqrt{3} = 0$

g. $\sqrt{2} \cos x + 1 = 0$ h. $\cos x - 1 = 0$ i. $\tan x = \sqrt{3}$

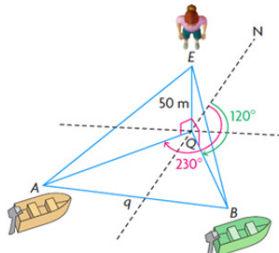
- ④ Prove each identity.

a) $(\sin \theta + \cos \theta)^2 = 1 + 2 \sin \theta \cos \theta$

b) $\frac{1}{\cos \theta} - \tan \theta \sin \theta = \cos \theta$

c) $\sin^2 \theta \left(1 + \frac{1}{\tan^2 \theta}\right) = 1$

- ⑤ Emma is on a 50 m high bridge and sees two boats anchored below. From her position, boat A has a bearing of 230° and boat B has a bearing of 120° . Emma estimates the angles of depression to be 38° for boat A and 35° for boat B. How far apart are the boats to the nearest metre?



- ⑥ Prove the trig identities, explain what is done in each step.

2 a) $\sin^4 \alpha - \cos^4 \alpha = \sin^2 \alpha - \cos^2 \alpha$

4 b) $\frac{\sin x}{1 + \cos x} = \csc x - \cot x$

← any restrictions on angle x?

- ⑦ Decide how many Δ 's are possible

a) $a = 15, b = 12, \angle A = 135^\circ$

b) $a = 5, b = 8, \angle A = 40^\circ$

c) $a = 9, b = 12, \angle A = 35^\circ$

MHF

8) If $\theta = \frac{7\pi}{6}$, $\alpha = \frac{-9\pi}{4}$, $\csc \beta = \frac{-5}{3}$, and $\cos \phi = 0$

State only exact answers, if impossible – round to 2 decimals

- Draw separate pictures for each angle $\theta, \alpha, \beta, \phi$ and the triangles that relate to them, if possible.
- Solve for β and ϕ within the first positive revolution in radians
- Find all possible answers for $\cot \theta$, $\cos \alpha$, $\tan \beta$, and $\sin \phi$
- Convert α to degrees, and show a check of your answer in c. using calculator in degree mode and in radian mode.

9.)

a) Find the exact ratio for $\csc \theta$, $\sec \theta$, and $\cot \theta$ for $\frac{2\pi}{3}$ radians.

b) Find all the possible angles for A if $0 \leq A \leq 2\pi$:

i) $\cos A = \frac{-1}{\sqrt{2}}$

ii) $\tan A = \frac{-1}{\sqrt{3}}$

c) Solve for θ if $\cos \theta = \frac{\sqrt{3}}{2}$ and $-\pi \leq \theta \leq 2\pi$.

d) Find the exact value of $\csc\left(\frac{7\pi}{6}\right)$.

e) Find the exact value of $\sec\left(\frac{21\pi}{4}\right)$.

f) Find all values of θ for which $2\sin \theta - 1 = 0$ for $\theta \in (-\infty, \infty)$

10.)

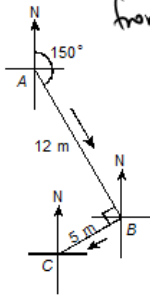
If $\cos \theta = \frac{-5}{13}$ and $\theta \in (-\infty, \infty)$

determine

- $\tan \theta$
- $\sec \theta$
- the possible values of θ to the nearest tenth

AP

11. Find compass bearing and true bearing from A to C .



12. Group A of bushwalkers leaves a starting point S and walks on a compass bearing of $N60^\circ E$ at 5 km/h . At the same time, group B leaves point S and walks on a compass bearing of $S50^\circ E$ at 6 km/h . Each group walks for 4 hours then stops.
- How far is each group from the starting point?
 - Find the distance between the groups.
 - What compass bearing should group B follow so they can meet group A ?
 - How long will it take group B to reach group A if they walk at 5 km/h ?

13. The bearing from A to C is $S 52^\circ E$. The bearing from A to B is $N 84^\circ E$. The bearing from B to C is $S 38^\circ W$. A plane flying at 250 mph takes 2.4 hours to go from A to B . Find the distance from A to C .

14. A man wandering in the desert walks 2.3 miles in the direction $S 31^\circ W$. He then turns 90° and walks 3.5 miles in the direction $N 59^\circ W$. At that time, how far is he from his starting point, and what is his bearing from his starting point?

15. Radar stations A and B are on the east-west line, 3.7 km apart. Station A detects a plane at C , on a bearing of 61° . Station B simultaneously detects the same plane, on a bearing of 331° . Find the distance from A to C .