

PreCalculus Worksheet

Your Name:

(1-4) Evaluate precisely (do not approximate).

1. $\tan \frac{8\pi}{3}$

2. $3\csc \frac{11\pi}{6}$

3. $\cot \frac{5\pi}{3}$

4. $\cos^{-1} \left(\cos \frac{5\pi}{4} \right)$

5. $\sin x = \sqrt{1 - \cos^2 x}$

Is the above statement true for all $x \in \mathbb{R}$? Why or why not?

(6-8) Solve for all possible triangles that satisfy the given conditions. Indicate all missing sides and angles accurate to three significant digits. For each solution, also indicate the area of the triangle.

6. $c = 12.7$
 $\angle B = 48.6^\circ$
 $\angle A = 65.3^\circ$

7. $a = 4.33$
 $b = 5.51$
 $\angle A = 0.44$

8. $a = 23.1$
 $b = 35.1$
 $c = 12.7$

(9-10) Write the first trigonometric function in terms of the second for the given quadrant.

9. $\sin \theta$, $\sec \theta$, θ in quadrant III

10. $\csc \theta$, $\cot \theta$, θ in quadrant I

11. Planet Ajax orbits star Silus at a distance of 120 gm with an angular speed of 3.89 degrees per day. Planet Cofax orbits Silus at a distance of 374 gm with a linear speed of 1.82 gm per day.

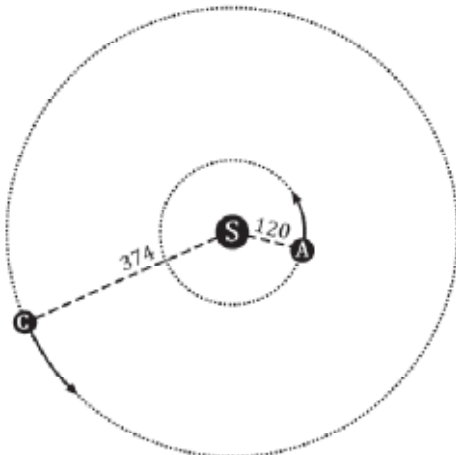
a. What is the linear speed of Ajax?

b. What is the angular speed of Cofax?

c. What is the orbital period of Ajax (How long is Ajax's year)?

d. What is the orbital period of Cofax?

We first observe this system on day 0, when the two planets are on exact opposite sides of Silus.



Day 88

e. What is the distance between Ajax and Cofax on day 0?

On day 88, it is observed that the angle between Ajax and Cofax (angle S on diagram) is 138 degrees.

f. What is the distance between Ajax and Cofax on day 88?

g. What is the distance between Ajax and Cofax on day 29?