

Practice Quiz 8

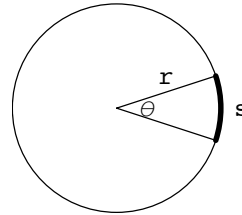
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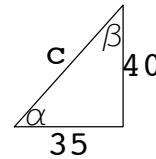
1. Find the radius of the circle given in the diagram to the right if the length of the arc $s = 25\pi$ feet and the angle $\theta = \frac{\pi}{6}$ radians.



2. Two research vessels are studying sea currents in the north Atlantic Ocean. At 6:30 AM on April 11 the first ship was at latitude 70 degrees, 25 minutes. The second ship was due south of it at latitude 25 degrees, 45 minutes. Using $r = 3960$ miles for the radius of the Earth determine the distance between the two ships along the surface of the Earth.

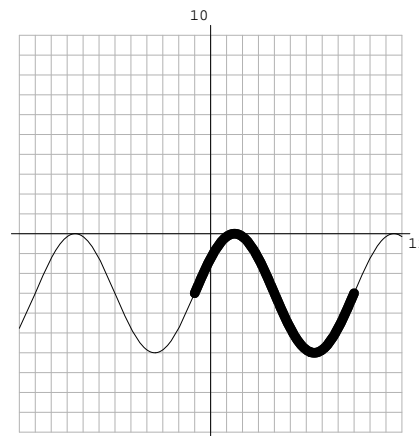
3. Solve the triangle by finding the values of

- i. $c =$ _____
 ii. (in degrees) $\alpha =$ _____
 iii. (in degrees) $\beta =$ _____.



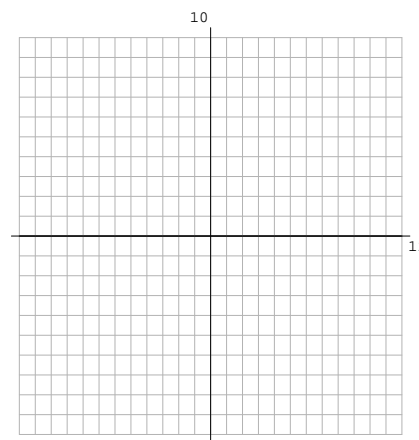
4. From the graph find $y = A \cdot \sin(\omega \cdot t - \phi) + S$

- ii. What is the amplitude? _____
 iii. What is the vertical shift? _____
 iv. What is the wavelength? _____.
 v. What is the phase shift (starting x-value)? _____



5. Sketch the graph of $y = 3 \sin\left(\frac{\pi x}{5} + \frac{3\pi}{5}\right) + 1$

- ii. What is the amplitude? _____
 iii. What is the vertical shift? _____
 iv. What is the wavelength? _____.
 v. What is the phase shift (starting x-value)? _____



ANS: 1) $r = 150$; 2) 3087.14 mi; 3) $c = 53.1507$, $\alpha = 48.8141^\circ$, $\beta = 41.1859^\circ$; 4) $A = 3$, $S = -3$, $WL = 10$, $PhS = -1$, $y = 3 \sin\left(\frac{\pi x}{5} + \frac{\pi}{5}\right) - 3$; 5) $A = 3$, $S = 1$, $WL = 10$, $PhS = -3$;

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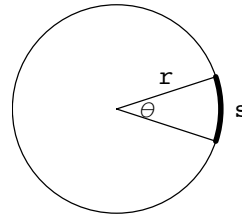
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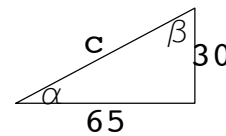
6. Find the radius of the circle given in the diagram to the right if the length of the arc $s = 110\pi$ feet and the angle $\theta = \frac{5\pi}{18}$ radians.



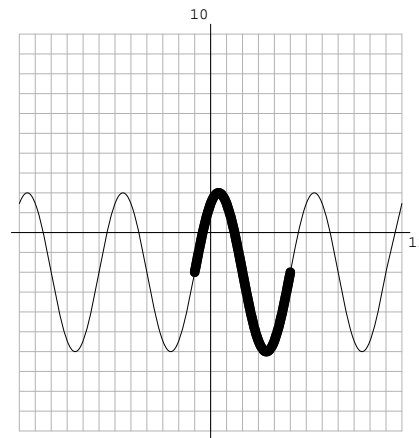
7. Two research vessels are studying sea currents in the north Atlantic Ocean. At 9:30 PM on July 27 the first ship was at latitude 70 degrees, 25 minutes. The second ship was due south of it at latitude 65 degrees, 30 minutes. Using $r = 3960$ miles for the radius of the Earth determine the distance between the two ships along the surface of the Earth.

8. Solve the triangle by finding the values of

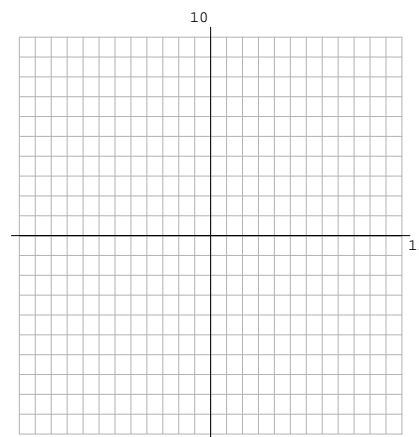
- i. $c =$ _____
 ii. (in degrees) $\alpha =$ _____
 iii. (in degrees) $\beta =$ _____.



9. From the graph find $y = A \cdot \sin(\omega \cdot t - \phi) + S$
- ii. What is the amplitude? _____
- iii. What is the vertical shift? _____
- iv. What is the wavelength? _____.
- v. What is the phase shift (starting x-value)? _____



10. Sketch the graph of $y = 2 \sin\left(\frac{\pi x}{2} + \frac{\pi}{2}\right) - 4$
- ii. What is the amplitude? _____
- iii. What is the vertical shift? _____
- iv. What is the wavelength? _____.
- v. What is the phase shift (starting x-value)? _____



ANS: 6) $r = 396$; 7) 339.816 mi; 8) $c = 71.5891$, $\alpha = 24.7751^\circ$, $\beta = 65.2249^\circ$; 9) $A = 4$, $S = -2$, $WL = 6$, $PhS = -1$, $y = 4 \sin\left(\frac{\pi x}{3} + \frac{\pi}{3}\right) - 2$; 10) $A = 2$, $S = -4$, $WL = 4$, $PhS = -1$;