

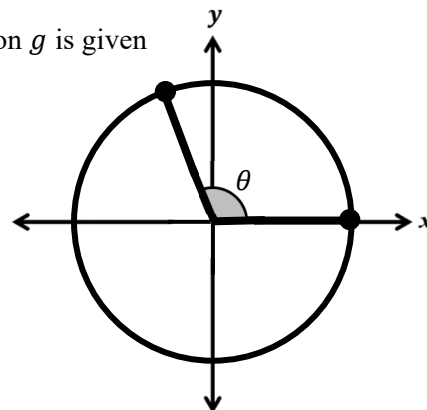
3.4 Sine and Cosine Function Graphs

AP Precalculus

Solutions

3.4 Practice

1. We are given an angle θ , in standard position as shown in the figure. The function g is given by $g(a) = \cos a$. For the angle α (not shown), $\theta < \alpha < \frac{3\pi}{2}$.

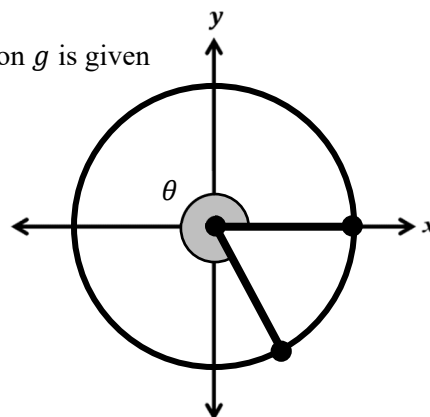


D

- (A) $g(\alpha) < g(\theta)$ (B) $g(\alpha) > g(\theta)$ (C) $g(\alpha) = g(\theta)$

- (D) Depending on the value of α , sometimes $g(\alpha) < g(\theta)$ and sometimes $g(\alpha) > g(\theta)$.
-

2. We are given an angle θ , in standard position as shown in the figure. The function g is given by $g(a) = \sin a$. For the angle α (not shown), $\theta < \alpha < 2\pi$. Which of the following is true?

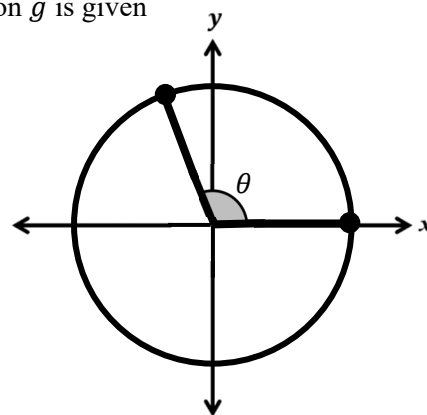


B

- (A) $g(\alpha) < g(\theta)$ (B) $g(\alpha) > g(\theta)$ (C) $g(\alpha) = g(\theta)$

- (D) Depending on the value of α , sometimes $g(\alpha) < g(\theta)$ and sometimes $g(\alpha) > g(\theta)$.
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3. We are given an angle θ , in standard position as shown in the figure. The function g is given by $g(a) = \cos a$. For the angle α (not shown), $\theta < \alpha < 2\pi$. Which of the following is true?



D

- (A) $g(\alpha) < g(\theta)$ (B) $g(\alpha) > g(\theta)$ (C) $g(\alpha) = g(\theta)$

- (D) Depending on the value of α , sometimes $g(\alpha) < g(\theta)$ and sometimes $g(\alpha) > g(\theta)$.

The function f is given by $f(\theta) = \cos \theta$. Describe the concavity of f on the interval, and if f is increasing or decreasing on the interval.

4. $0 < \theta < \frac{\pi}{2}$

Concave down
Decreasing

5. $\frac{\pi}{2} < \theta < \pi$

Concave up
Decreasing

6. $\pi < \theta < \frac{3\pi}{2}$

Concave up
Increasing

7. $\frac{3\pi}{2} < \theta < 2\pi$

Concave down
Increasing

8. $0 < \theta < \pi$

Concave down from $0 < \theta < \frac{\pi}{2}$
Concave up from $\frac{\pi}{2} < \theta < \pi$
Decreasing from $0 < \theta < \pi$

The function f is given by $f(\theta) = \sin \theta$. Describe the concavity of f on the interval, and if f is increasing or decreasing on the interval.

9. $0 < \theta < \frac{\pi}{2}$

Concave down
Increasing

10. $\frac{\pi}{2} < \theta < \pi$

Concave down
Decreasing

11. $\pi < \theta < \frac{3\pi}{2}$

Concave up
Decreasing

12. $\frac{3\pi}{2} < \theta < 2\pi$

Concave up
Increasing

13. $\pi < \theta < 2\pi$

Concave up from $\pi < \theta < 2\pi$
Decreasing from $\pi < \theta < \frac{3\pi}{2}$
Increasing from $\frac{3\pi}{2} < \theta < 2\pi$

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3.4 Test Prep

14. For the function $f(\theta) = \cos \theta$, what are all values of the domain when $f(\theta) = 1$?

$2n\pi$ where n in an integer.

15. For the function $g(\theta) = \sin \theta$, what are all values of the domain when $g(\theta) = 0$?

$n\pi$ where n in an integer.