

A2.A.63: Domain and Range: Restrict the domain of the sine, cosine, and tangent functions to ensure the existence of an inverse function

- 1 In which interval of $f(x) = \cos(x)$ is the inverse also a function?

- 1) $-\frac{\pi}{2} < x < \frac{\pi}{2}$
- 2) $-\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$
- 3) $0 \leq x \leq \pi$
- 4) $\frac{\pi}{2} \leq x \leq \frac{3\pi}{2}$

- 2 Which statement regarding the inverse function is true?

- 1) A domain of $y = \sin^{-1} x$ is $[0, 2\pi]$.
- 2) The range of $y = \sin^{-1} x$ is $[-1, 1]$.
- 3) A domain of $y = \cos^{-1} x$ is $(-\infty, \infty)$.
- 4) The range of $y = \cos^{-1} x$ is $[0, \pi]$.

- 3 The function $f(x) = \tan x$ is defined in such a way that $f^{-1}(x)$ is a function. What can be the domain of $f(x)$?

- 1) $\{x \mid 0 \leq x \leq \pi\}$
- 2) $\{x \mid 0 \leq x \leq 2\pi\}$
- 3) $\left\{x \mid -\frac{\pi}{2} < x < \frac{\pi}{2}\right\}$
- 4) $\left\{x \mid -\frac{\pi}{2} < x < \frac{3\pi}{2}\right\}$

- 4 When the inverse of $\tan \theta$ is sketched, its domain is

- 1) $-1 \leq \theta \leq 1$
- 2) $-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$
- 3) $0 \leq \theta \leq \pi$
- 4) $-\infty < \theta < \infty$

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|---|--------|---------------|
| 1 | ANS: 3 | REF: 061224a2 |
| 2 | ANS: 4 | REF: 061427a2 |
| 3 | ANS: 3 | REF: 061022a2 |
| 4 | ANS: 4 | REF: 011622a2 |