

December 12, 2025

**1 Find the derivative of the function.**

$$f(x) = \arcsinx + \arccos x$$

**2 Evaluate the definite integral.**

$$\int_0^{\pi/2} \frac{\cos x}{1 + \sin^2 x} dx$$

**3 Find the area of the region.**

$$y = -x^3 + 2, \quad y = x - 3, \quad x = -1, \quad x = 1$$

**4 Evaluate the limit, using L'Hôpital's Rule if necessary.**

$$\lim_{x \rightarrow 1} \frac{\ln x}{\sin(\pi x)}$$