

Let $f(x) = \sqrt{\sin^{-1}(3x - 4x^3)}$, then the domain of f is

(1) $\left[-1, -\frac{1}{2}\right] \cup \left[0, \frac{1}{2}\right]$

(2) $\left[-1, -\frac{\sqrt{3}}{2}\right] \cup \left[0, \frac{\sqrt{3}}{2}\right]$

(3) $\left[0, \frac{1}{2}\right]$

(4) $[-1, 1]$

Answer (2)

Given $f(x) = \sqrt{\sin^{-1}(3x - 4x^3)}$, is defined for $0 \leq 3x - 4x^3 \leq 1$

$$\Rightarrow x \in \left[-1, -\frac{\sqrt{3}}{2}\right] \cup \left[0, \frac{\sqrt{3}}{2}\right]$$