Extra Exercise Problem Sets 2

Oct. 19. 2018

Problem 1. In class we have shown that the extrema of the function $f(x) = 2\sin x - \cos 2x$ on $[0, 2\pi]$ is 3 (maximum) and $-\frac{3}{2}$ (minimum). Find the extrema of f on $[0, 2\pi]$ by the following procedure.

1. Let $t = \sin x$. Express $f(x)$ in terms of t; that is, find the function g so that $g(t) = f(x)$, where $t = \sin x$.

2. On the interval $x \in [0, 2\pi]$, $-1 \leqslant t \leqslant 1$. Find the extrema of g on $[-1, 1]$.

3. Are the extrema of g the same as the extrema of f?

4. Do the same for finding the extrema of f on the interval $[\frac{\pi}{4}, \frac{5\pi}{6}]$.