

MAA Metro NY
October/November 2024: Problem of the Month
Going the distance...

Show that the distance traveled by an underdamped spring-mass system with displacement $u(t) = 6e^{-t} \cos(t - \frac{\pi}{4})$ is of the form $a\sqrt{b} \coth(\frac{\pi}{c})$, where a, b and c are integers.

Computer or AI assisted/generated solutions will not be accepted.