

EES 351: In-Class Exercise # 18

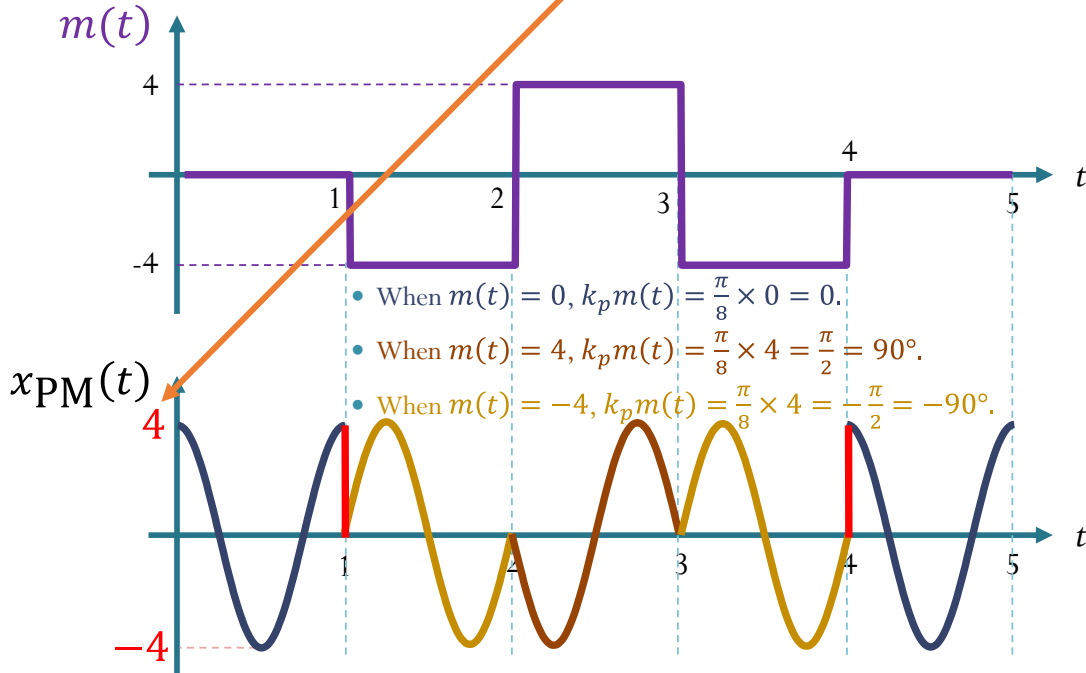
Instructions

1. Work alone or in a group of no more than three students. **The group cannot be the same as any of your former groups after the midterm.**
2. Only one submission is needed for each group.
3. **ENRE (Explanation is not required for this exercise.)**
4. You have two choices for submission:
 - (a) Online submission via Google Classroom
 - PDF only.
 - Only for those who can directly work on the posted files using devices with pen input.
 - Paper size should be the same as the posted file.
 - No scanned work, photos, or screen capture.
 - **Your file name should start with the 10-digit student ID of one member.** (You may add the IDs of other members, exercise #, or other information as well.)
 - (b) Hardcopy submission
5. **Do not panic.**

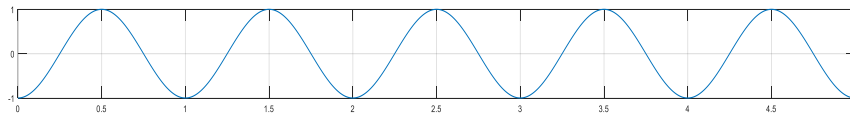
Date: 11 / 11 / 2020			
Name			ID <small>(last 3 digits)</small>

1. A PM signal is created from the message $m(t)$ by $x_{PM}(t) = 4\cos(2\pi f_c t + k_p m(t))$.

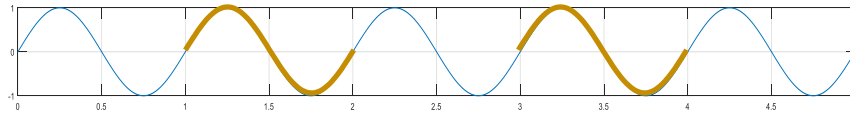
Suppose $f_c = 1$ and $k_p = \frac{\pi}{8} = 22.5^\circ$. For the message $m(t)$ plotted below. Plot the corresponding $x_{PM}(t)$.



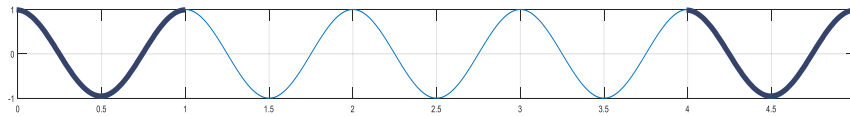
$\cos(2\pi t - 180^\circ)$



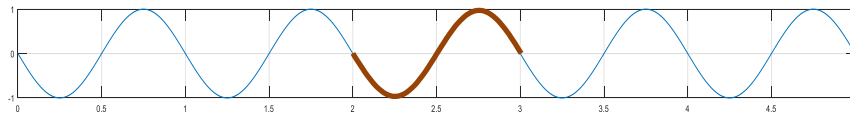
$\cos(2\pi t - 90^\circ)$



$\cos(2\pi t)$



$\cos(2\pi t + 90^\circ)$



$\cos(2\pi t + 180^\circ)$

