

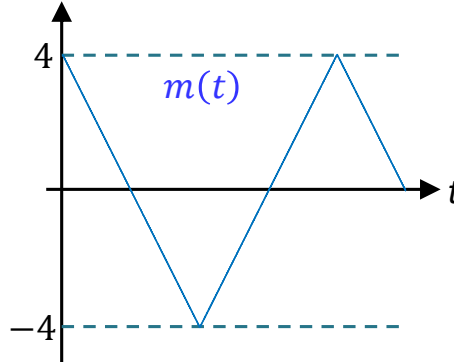
ECS 332: In-Class Exercise # 13 - Sol

Instructions

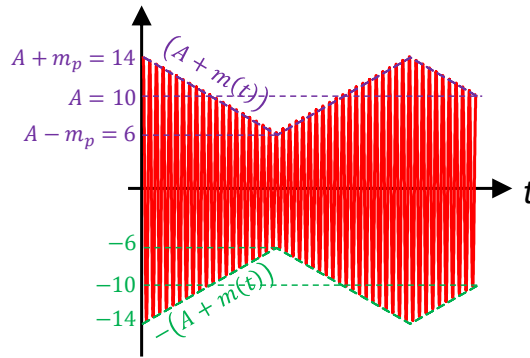
1. Separate into groups of no more than three students each. **The group cannot be the same as any of your former groups after the midterm.**
2. [ENRE] Explanation is not required for this exercise.
3. **Do not panic.**

| | | | |
|-----------------------------------|--|--|--------------------|
| Date: <u>18</u> / <u>10</u> /2019 | | | |
| Name | | | ID (last 3 digits) |
| Prapun | | | 5 5 5 |
| | | | |
| | | | |

Consider an AM transmission of the message $m(t)$ shown below:

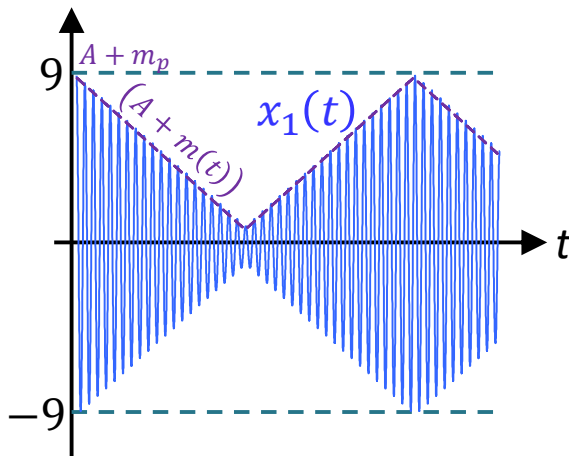


1. Assume that the carrier frequency f_c is large (enough). Plot the corresponding AM signal $x_{AM}(t)$ when the modulation index is 40%



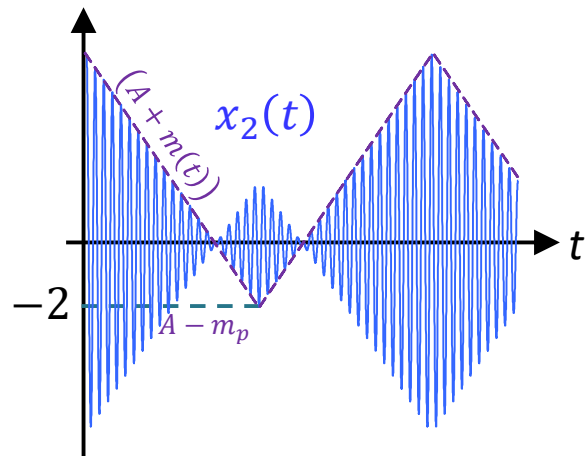
2. In each part below, the AM signal is plotted. Determine the modulation index used in each case.

(a)



$$\begin{aligned}
 A + m_p &= 9 \\
 A + 4 &= 9 \\
 A &= 5 \\
 \mu &= \frac{m_p}{A} = \frac{4}{5} = 0.8 = 80\%
 \end{aligned}$$

(b)



$$\begin{aligned}
 A - m_p &= -2 \\
 A - 4 &= -2 \\
 A &= 2 \\
 \mu &= \frac{m_p}{A} = \frac{4}{2} = 2 = 200\%
 \end{aligned}$$