

Name _____

MEE 211: Problems for Mastery Quiz # 1

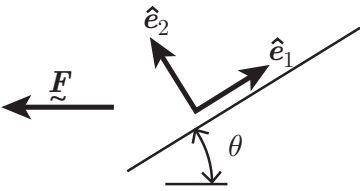
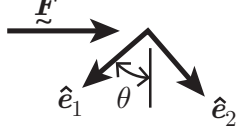
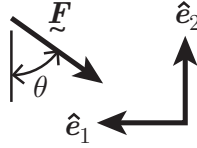
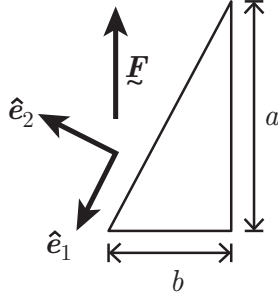
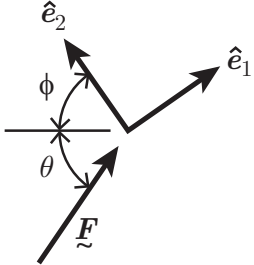
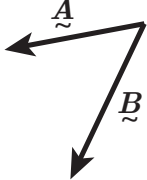
Below and on the next two pages, I provide a list of potential problems that you will find on the first mastery quiz. Your mastery quiz will consist of six of these questions.

In many of these questions, you are to decompose vector $\underline{\underline{F}}$ into components in the \hat{e}_1 and \hat{e}_2 directions. Your answers should be written in terms of the quantities a , b , θ , ϕ , and F , where F is the magnitude of the vector $\underline{\underline{F}}$. For example, your answer might look like this:

$$\underline{\underline{F}} = F \cos(\theta) \hat{e}_1 + F \sin(\theta) \hat{e}_2.$$

You may write your answers in terms of sums and differences of the angles given (e.g. $\phi + \theta$ or $\phi - \theta$), but do not write them in terms of angles such as $90^\circ - \theta$. Also, do not write your answers in terms of sines and/or cosines of arctangents.

In other problems, you are to draw a vector which is the sum of vectors $\underline{\underline{A}}$ and $\underline{\underline{B}}$ and the difference between $\underline{\underline{A}}$ and $\underline{\underline{B}}$.

| | | |
|--|--|---|
| <p>1</p>  | <p>2</p>  | <p>3</p>  |
| <p>4</p>  | <p>5</p>  | <p>6</p>  <p>Draw $\underline{\underline{A}} + \underline{\underline{B}}$ $\underline{\underline{A}} - \underline{\underline{B}}$ $\underline{\underline{B}} - \underline{\underline{A}}$</p> |