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PH 125 / LeClair

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### Quiz 3: What goes up must come down

**Instructions:**

1. Answer both questions below. Both have equal weight.
2. Express your answer with the appropriate units and significant digits
3. Show your work for full credit.

1. A projectile is launched on level ground with a velocity of  $\vec{v}_i = 3.00 \hat{i} + 4.00 \hat{j}$ . What is the launch angle  $\theta_i$ , relative to the x axis?

2. A particle has a trajectory that follows  $\vec{r} = (3.2 \hat{i} + 1.5 \hat{j})t + \frac{1}{2}(4.9 \hat{i} + 9.8 \hat{i})t^2$ , where  $t$  is in seconds, and  $r$  is in meters. What is the velocity in the y direction at  $t = 17.2$  s?