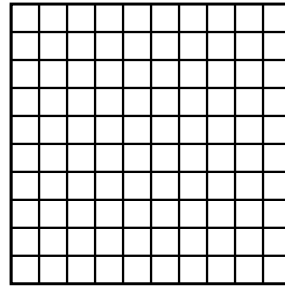
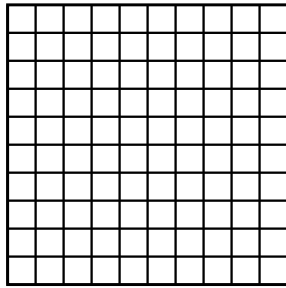

PHYS 1110 Group Work Sheet
Vectors

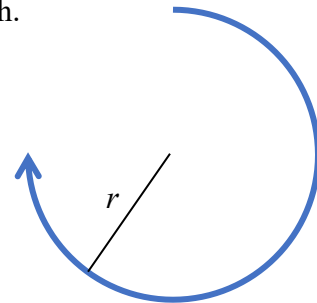
With your group, discuss how to answer these questions and write your group answer in the space provided.

Vector $\vec{A}$ can be expressed in (x, y) components as $\vec{A} = (2.00 \text{ m/s}, 5.00 \text{ m/s})$. Vector $\vec{B} = (1.00 \text{ m/s}, -3.00 \text{ m/s})$.

1. Draw vectors $\vec{A}$ and $\vec{B}$ in the grid.
2. Graphically add $\vec{A} + \vec{B}$ in the grid.



3. Find $\vec{A} + \vec{B}$ by adding the components together.
4. A pony on a lead of length $r = 5.0$ meters trots $\frac{3}{4}$ of the way around a complete circle.
 - a. What distance did the pony travel? This is its path length.
 - b. How far is the pony from where it started?
 - c. We can define coordinates as we find useful. Let's place the origin $(0, 0)$ at the center of the circle containing the pony's path, set the $+x$ direction as $\rightarrow$, and the $+y$ direction as $\uparrow$.
 - i. What are the (x, y) coordinates of the start of the pony's path?

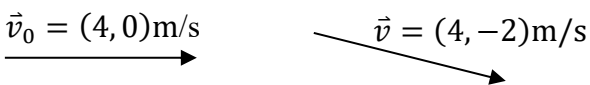


- ii. What are the (x, y) coordinates of the end of the pony's path?
- iii. What is the pony's displacement vector (from start to end)?
5. From the illustrated initial and final velocity vectors $\vec{v}_0$ and $\vec{v}$, specify the vector of the change in velocity $\Delta\vec{v}$ (sketch and components).

a. $\vec{v}_0 = (4, 0)\text{m/s}$ $\vec{v} = (3, 0)\text{m/s}$



b. $\vec{v}_0 = (4, 0)\text{m/s}$ $\vec{v} = (4, -2)\text{m/s}$



c. $\vec{v}_0 = (4, 0)\text{m/s}$ $\vec{v} = (5, 0)\text{m/s}$



d. $\vec{v}_0 = (4, 0)\text{m/s}$ $\vec{v} = (0, 4)\text{m/s}$

