- Upload a scanned PDF to Gradescope
- Show all work

1. (3 points) A rigid body is contacted at $p = (1, 2, 3)$ with a contact normal into the body $\hat{n} = (0, 1, 0)$. Write the constraint on the body's twist V due to this contact.

2. (3 points) Draw the set of feasible twists as CoRs when the triangle shown below is contacted only by fingers 1, 2, and 3.

3. (3 points) Draw the set of feasible twists as CoRs when the triangle shown below is contacted only by fingers 1, 2, and 4.

4. (3 points) Draw the set of feasible twists as CoRs when the triangle shown below is contacted only by fingers 1, 3, and 5.

5. (3 points) The figure shows five stationary "fingers" contacting an object. The object is in first-order form closure. If we take away one finger, the object may still be in force closure. For which subsets of four fingers is the object still in form closure? Prove your answers using graphical methods.