Develop the differential kinematics (i.e. relating joint and Cartesian   
velocities), and demonstrate how it could be used

To find the joint velocities to end effector, we will use Jacob0, because our end effector will have the same coordinate frame as the world frame, we will need the pallet to be lifted stable.

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To find our velocities represented in the end effector frame, we need to use jacobe:



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When we need to find the cartesian velocities, we will use the inverse Jacobian. This is only possible when the determinant of the Jacobian matrix is not 0. Therefore we change out jacob0, because when all the joints are 0, we will experience a singularity:

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We are still close to singularity, but not quite. This we can determine with the very small determinant.

We can use the vellipse to illustrate that out arm is close to singularity



