Inverse Kinematics for swerve with N wheels (N>2).

Pick a fixed point "C" on the robot to act as the reference for all calculations.

Fix an XY Cartesian coordinate system on the robot with the origin at C and the positive Y axis pointing in the robot's forward direction.

Let the location of the center of the i^{th} swerve wheel be specified by the coordinates (X_i,Y_i)[1].

Let ω_v be the desired clockwise robot rotation (in radians/sec) about the point C.

Let V_x and V_y be the components of the desired vehicle translational velocity[2] (with respect to the coordinate system fixed on the robot).

Then the forward speed of the i^{th} wheel should be set to[3]:

$$\mathbf{sqrt(W_{xi}^2+W_{yi}^2)}$$

And the steering angle of the i^{th} wheel should be set to[4]:

$$\mathbf{(180/\pi)\cdot atan2(W_{xi}\ ,W_{yi})}$$

… where $\mathbf{W_{xi} = V_x+\omega_v\cdot Y_i}$ and $\mathbf{W_{yi} = V_y-\omega_v\cdot X_i}$

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[1] Use the same units for all distance inputs

[2] Velocity units must be consistent with distance units

[3] Wheel speeds will be in the same units as input; see footnotes 2&3 above.
If any of the N wheel speeds exceeds the maximum, scale all wheel speeds down by the same factor.

[4] Angles will be in the range –180 to +180, clockwise, with zero occurring at the +Y axis.
If using the Excel atan2() function, reverse the order of the arguments.