Part 1: $\phi_l = (2\dot{x}_R - \dot{\theta} d)/2r$

$\phi_r = (2\dot{x}_R + \dot{\theta} d)/2r$

Part 2:

1. original point (x, y, θ)

goal point (x', y', θ')

$n = \sqrt{(y'-y)^2 + (x'-x)^2}$

if the bearing error is 0, $n = \dot{x}_R$

2. $a = \tan^{-1}\left(\frac{y_g - y_r}{x_g - x_r}\right) - \theta_r$

3. $\beta = \theta_g - \theta_r$

Part 3: 4.

$\phi_l = (2\dot{x}_R - \dot{\theta} d)/2r$

$\phi_R = (2\dot{x}_R + \dot{\theta} d)/2r$