

Fig. 21 Lawnmower pattern;  $K_P = 1$ ,  $K_{Pr} = 1.5$ ,  $K_D = 2$ ,  $K_{Dr} = K_{Dr\alpha} = 2$ ,  $K_{D\alpha} = 0.4$ ,  $K_{P\alpha} = 0$ ; (a) Quadrotor system performance, (b) Control performance, (c) Quadrotor trajectories.