實驗九

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實驗9-1

（2）下圖虛線框框處，為加入零點的位置，請根據表 9-1 給的條件，參考式(9-2)，繪製圖 9-6、9-7 的接線，並記錄其響應於表 9-1。

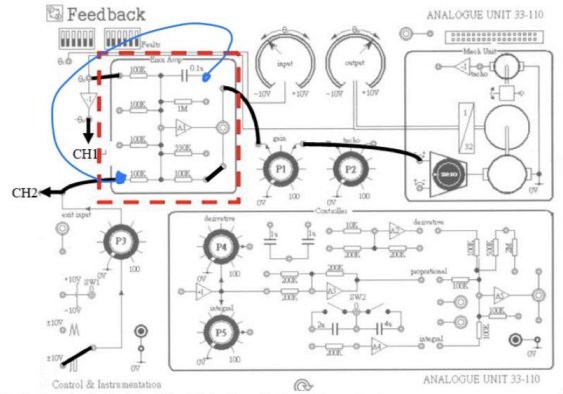


圖 9-6　直流馬達位置控制系統之接線圖(加入零點，$R_i = 100K$、$C_i = 0.1\mu$)

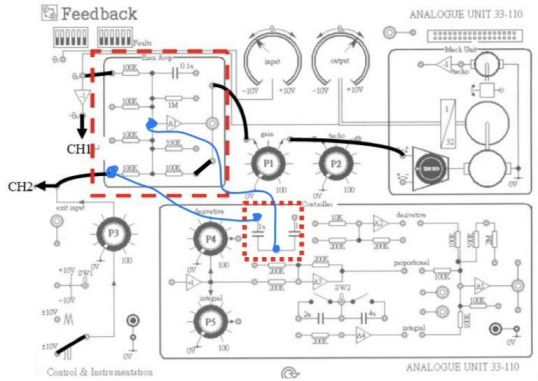


圖 9-7　直流馬達位置控制系統之接線圖(加入零點，$R_i = 100K$、$C_i = 1\mu$)

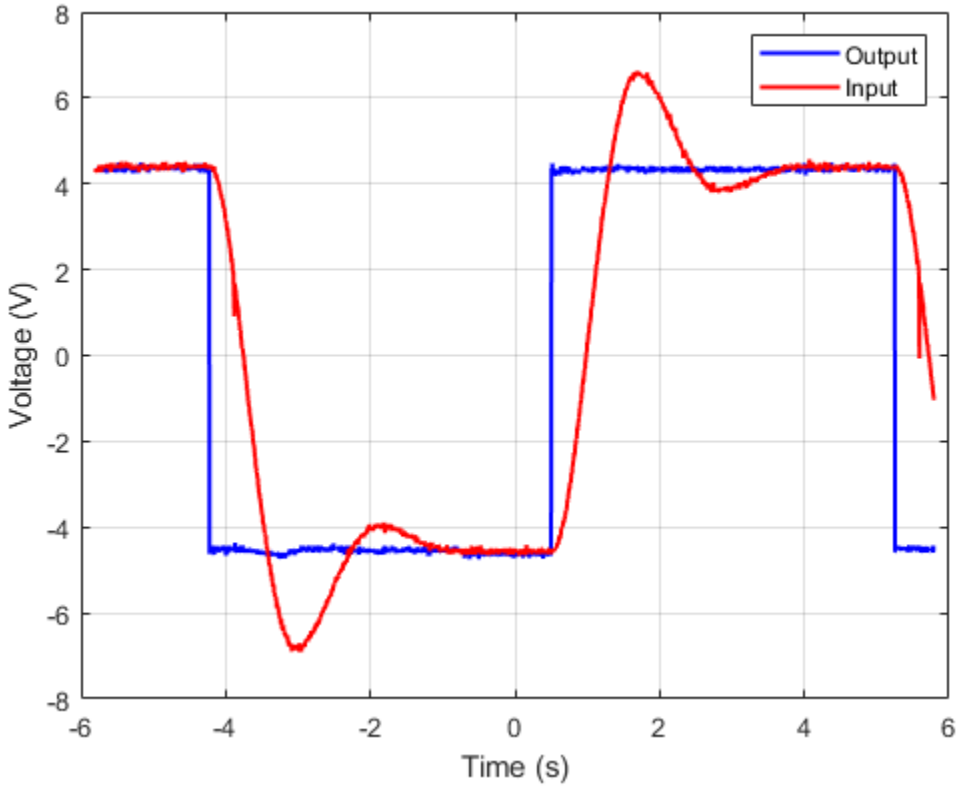
實驗9-1

表 9-1、零點對於暫態響應的影響

		零點	最大超量 [%]	安定時間 [ms]	上升時間 [ms]
實驗	未加入零點	-	25%	3320	820
	Ri = 100K，Ci = 0.1μ	-100	26%	6000	580
	Ri = 100K，Ci = 1μ	-10	25%	4680	460
模擬	未加入零點	-	62%	5000	666
	Ri = 100K，Ci = 0.1μ	-10	63%	5200	640
	Ri = 100K，Ci = 1μ	-10	40%	4100	650

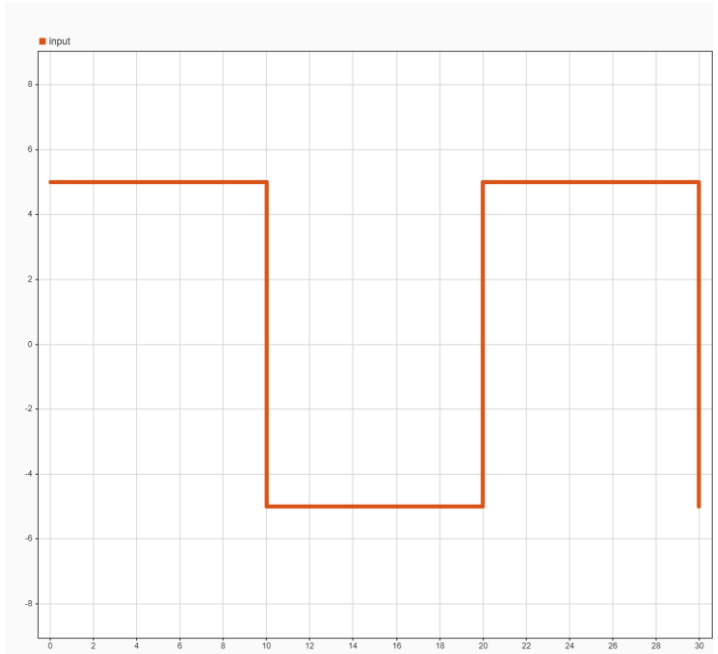
實驗9-1

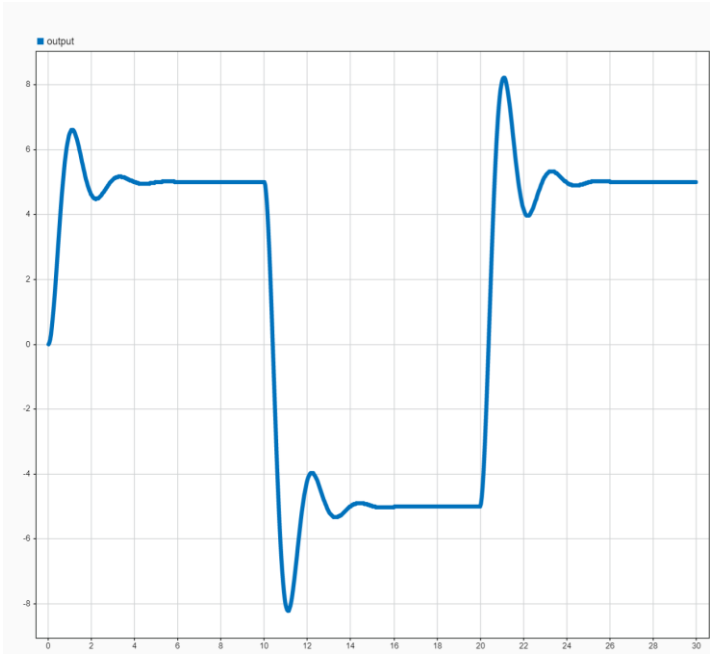
未加入零點

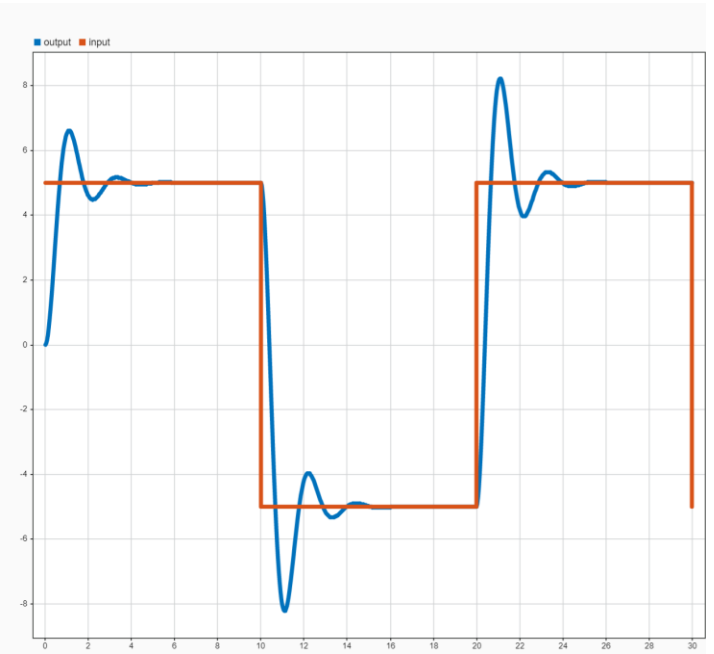


模擬9-1

未加入零點

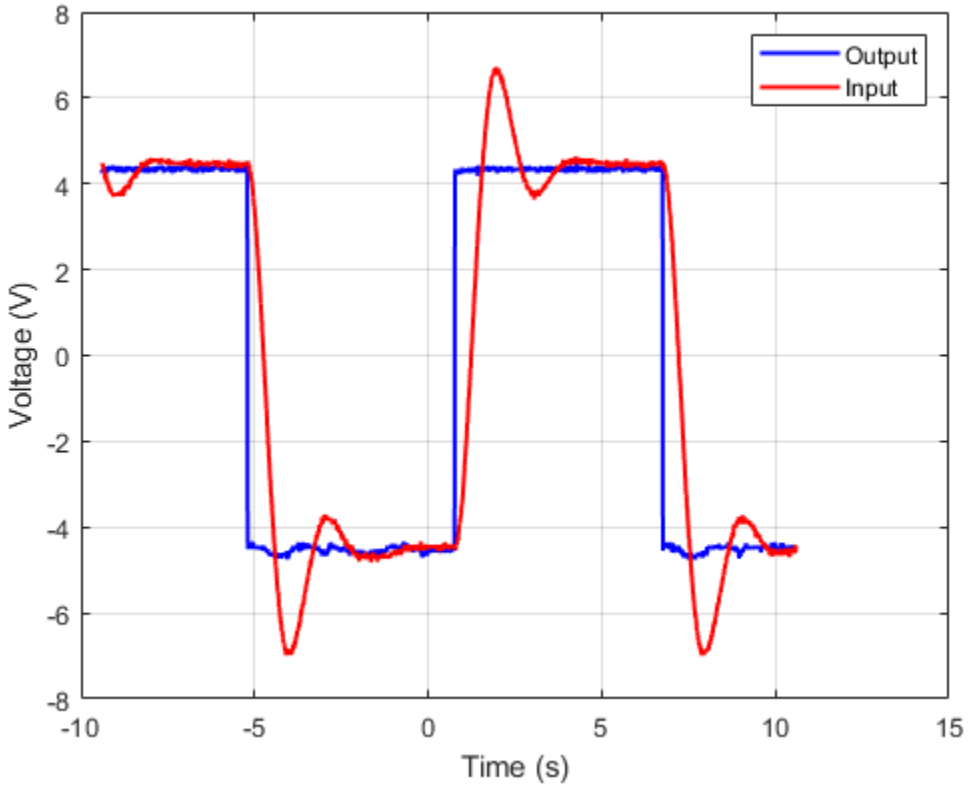






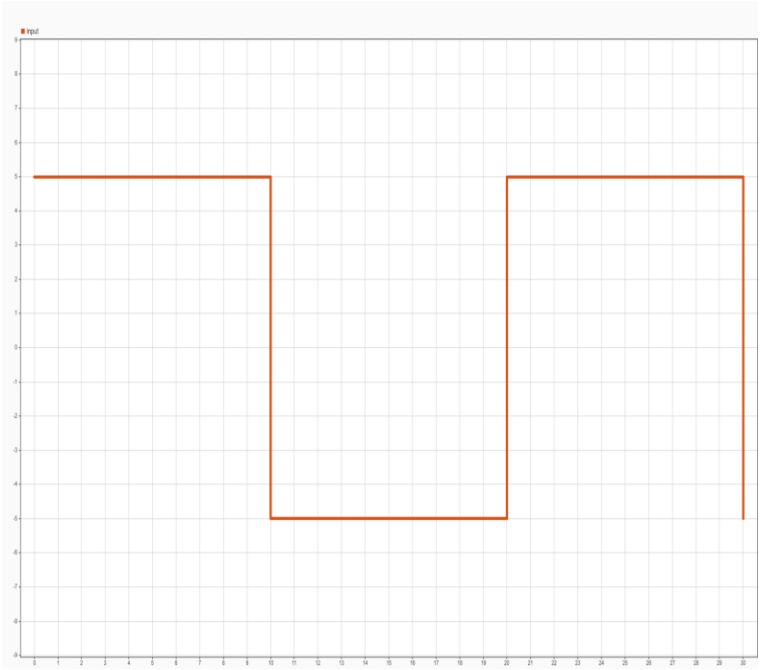
實驗9-1

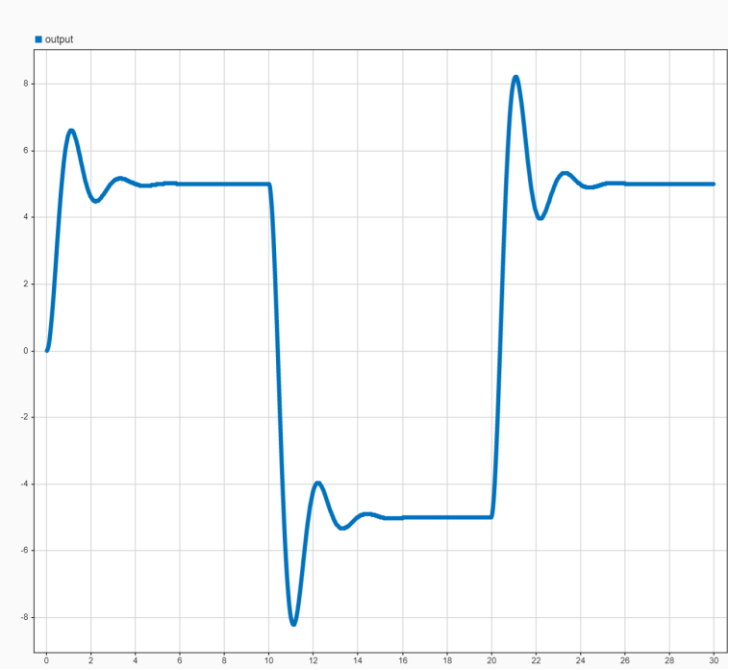
$R_i = 100K$ 、$C_i = 0.1\mu$

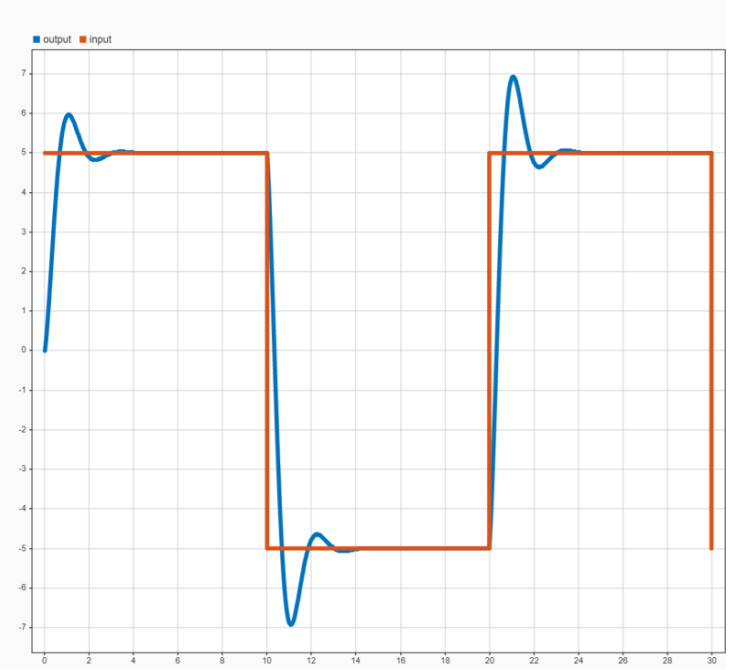


模擬9-1

$R_i = 100K$ 、$C_i = 0.1\mu$

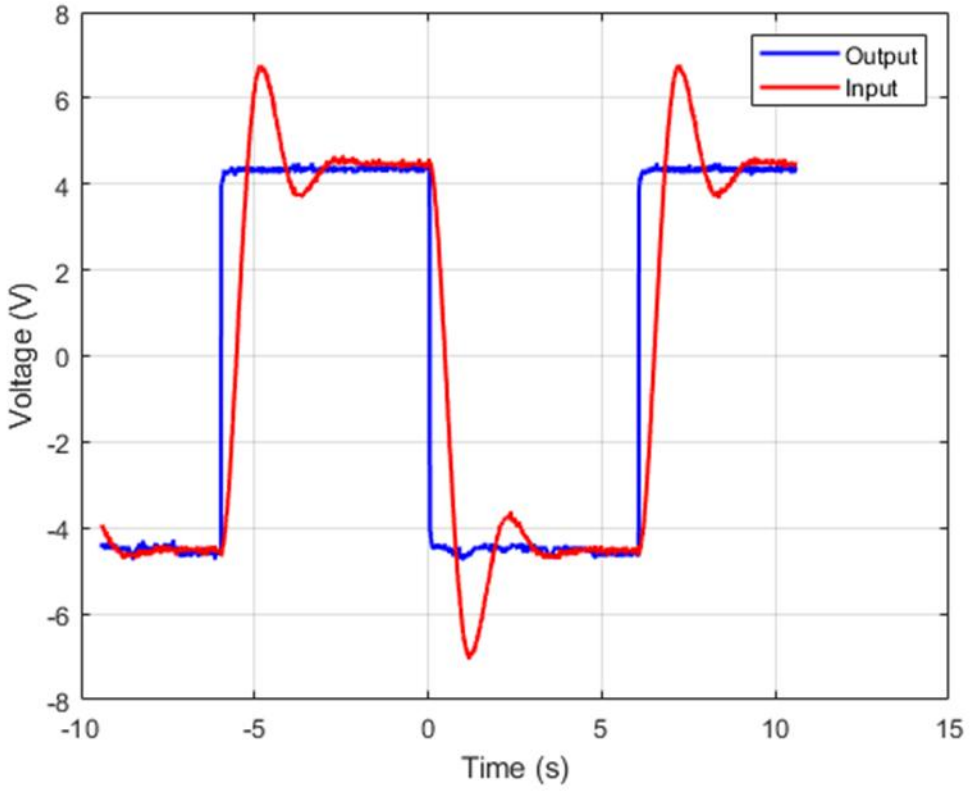






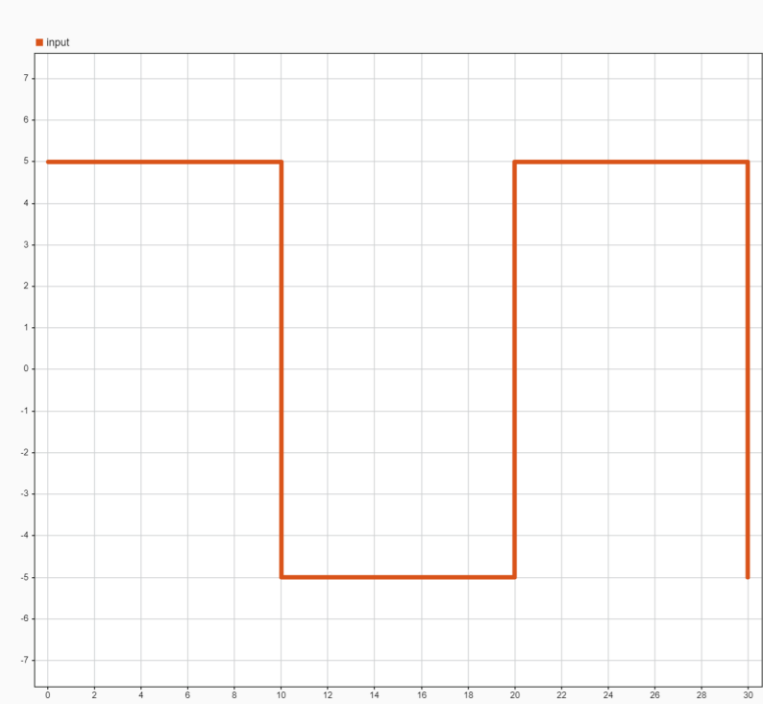
實驗9-1

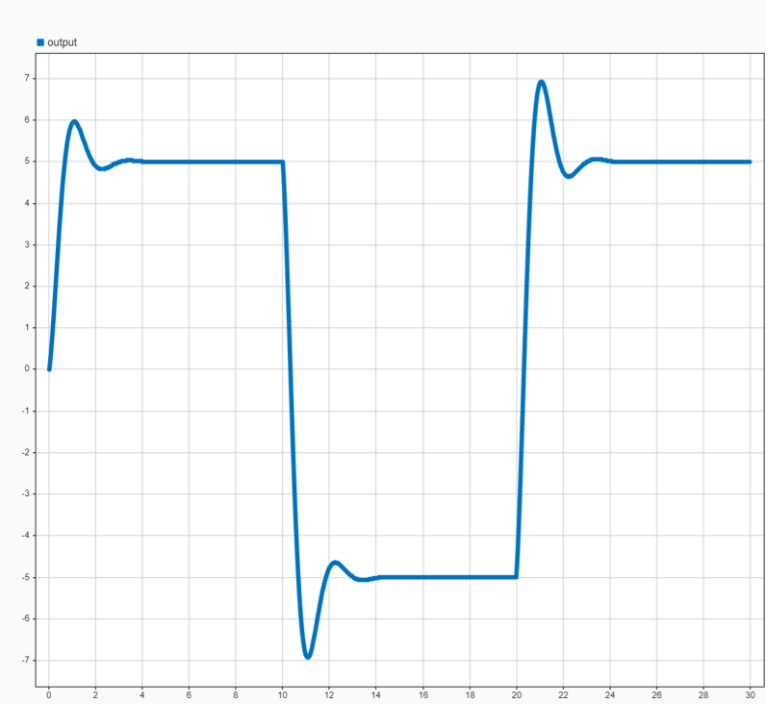
$R_i = 100K$ 、$C_i = 1\mu$

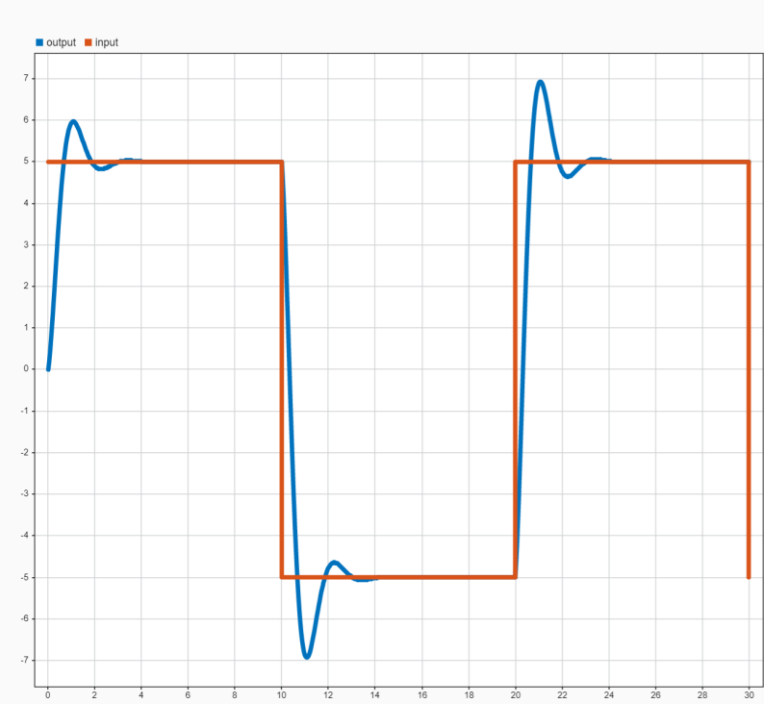


模擬9-1

$R_i = 100K$ 、$C_i = 1\mu$







問題討論

2. 設計零點時，**輸入電容**由0.1μ改接1μ，對於零點的位置會如何移動?(向左或向右，並解釋為什麼)，對於系統又有什麼影響呢?

ANS:

1. **零點會向左移動（頻率降低）**
2. **系統變得較穩定，超量減少，安定時間縮短**