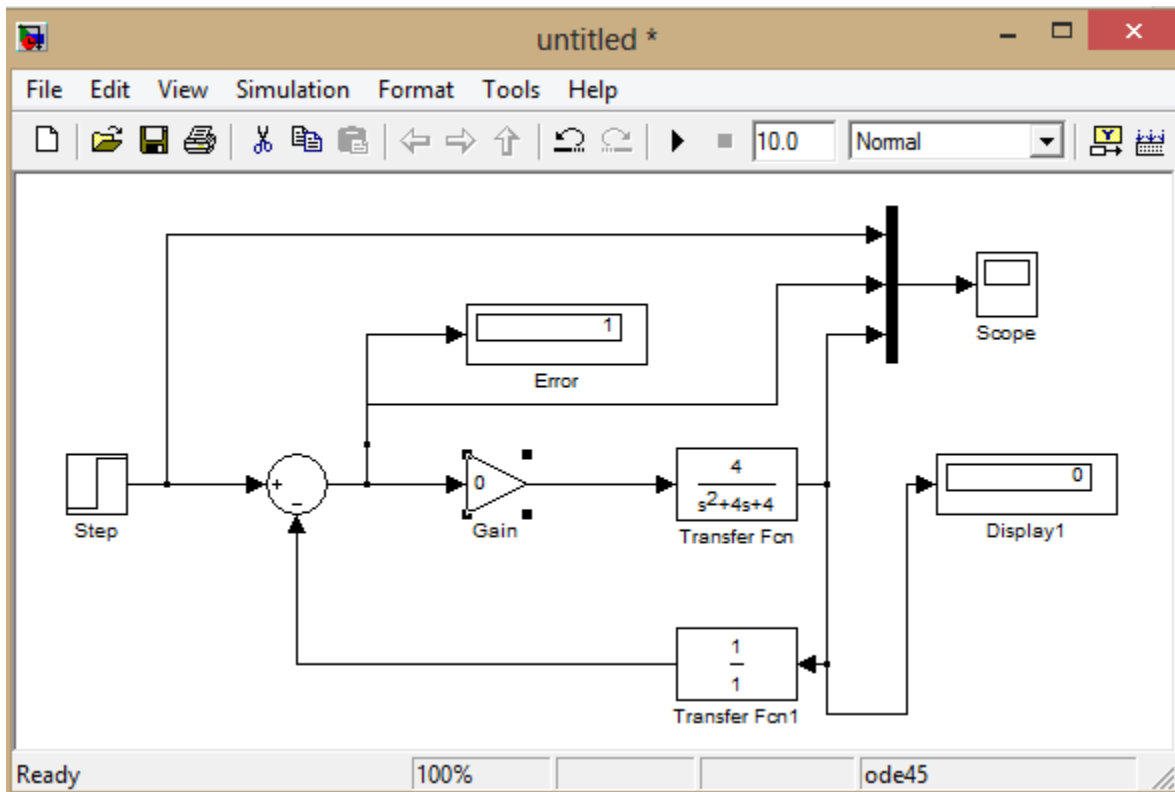
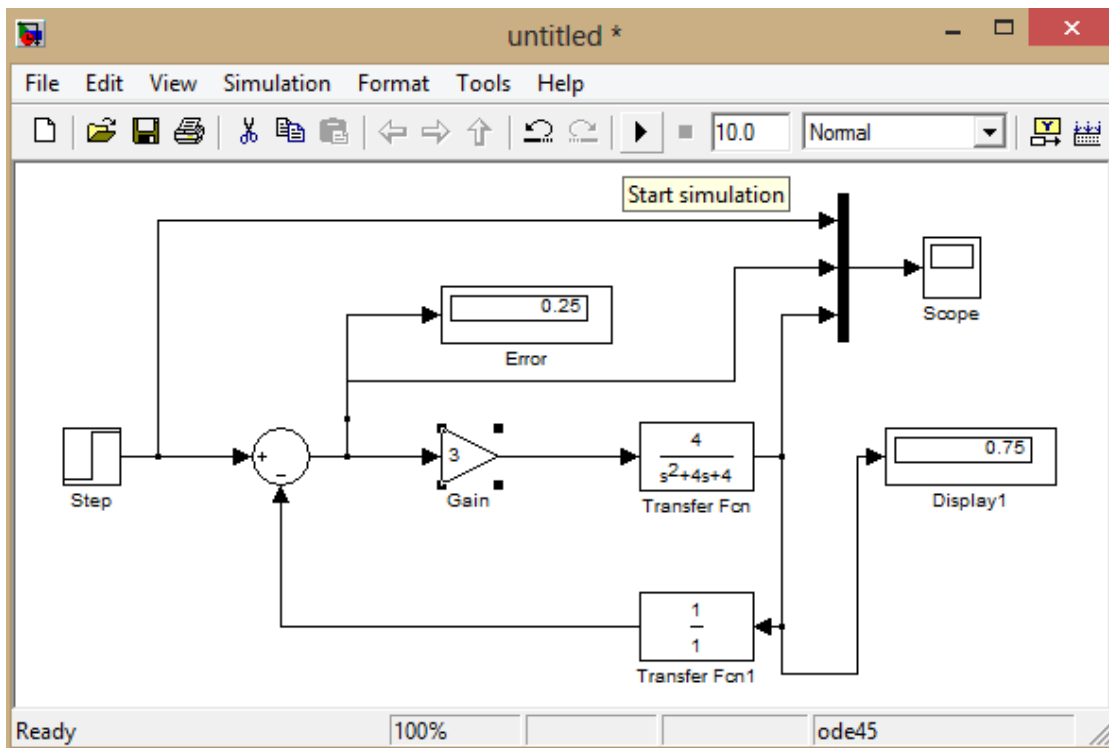


## Transfer Function $G(s) = \frac{4K_p}{s^2 + 4s + 4} + \frac{4K_p}{s^2 + 4s + 4} + \frac{4K_p}{s^2 + 4s + 4}$

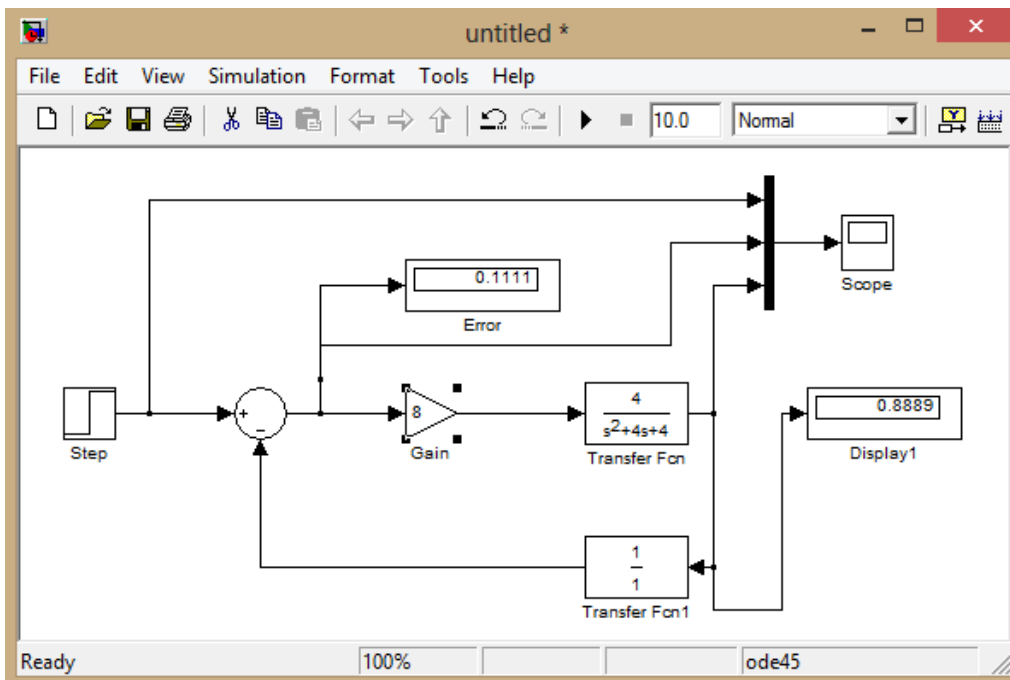
1) Gain  $K_p = 0$



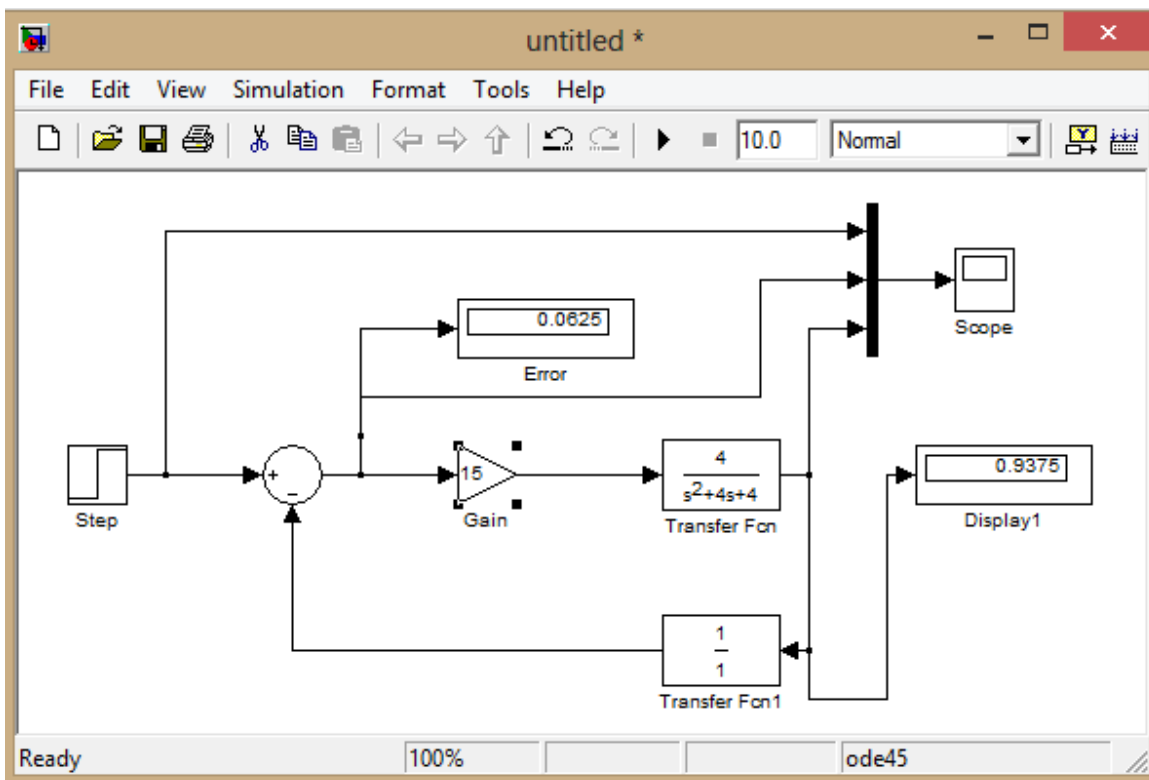
2) Gain  $K_p = 3$



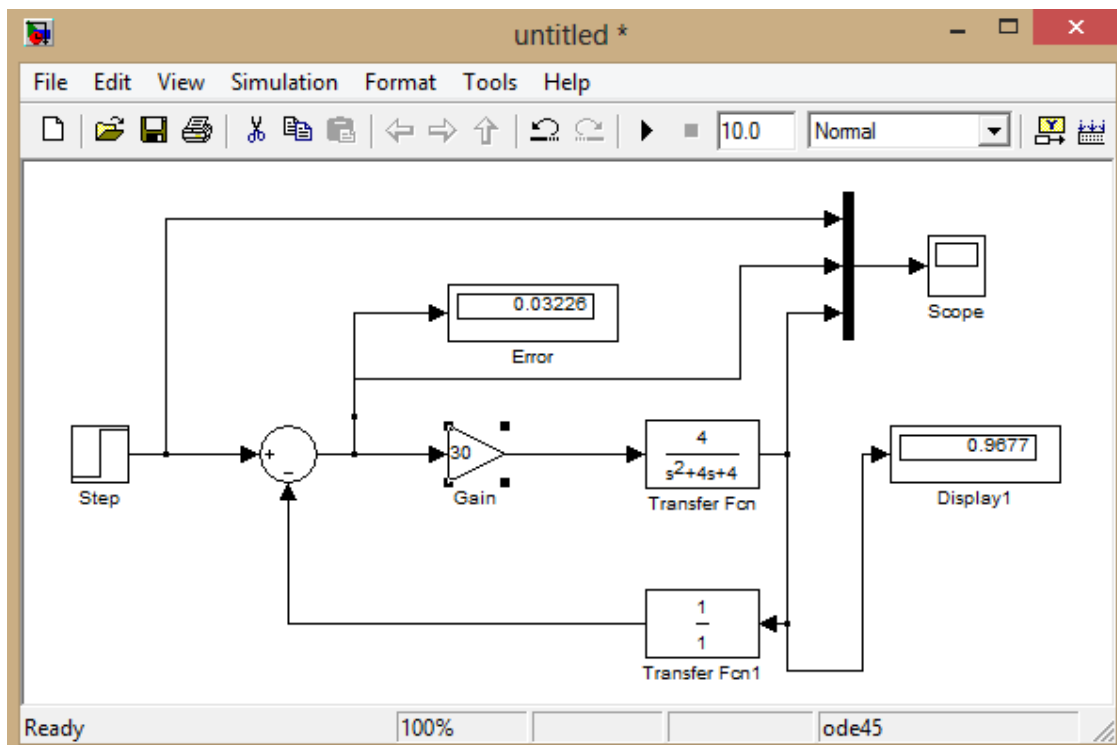
### 3) Gain Kp =8



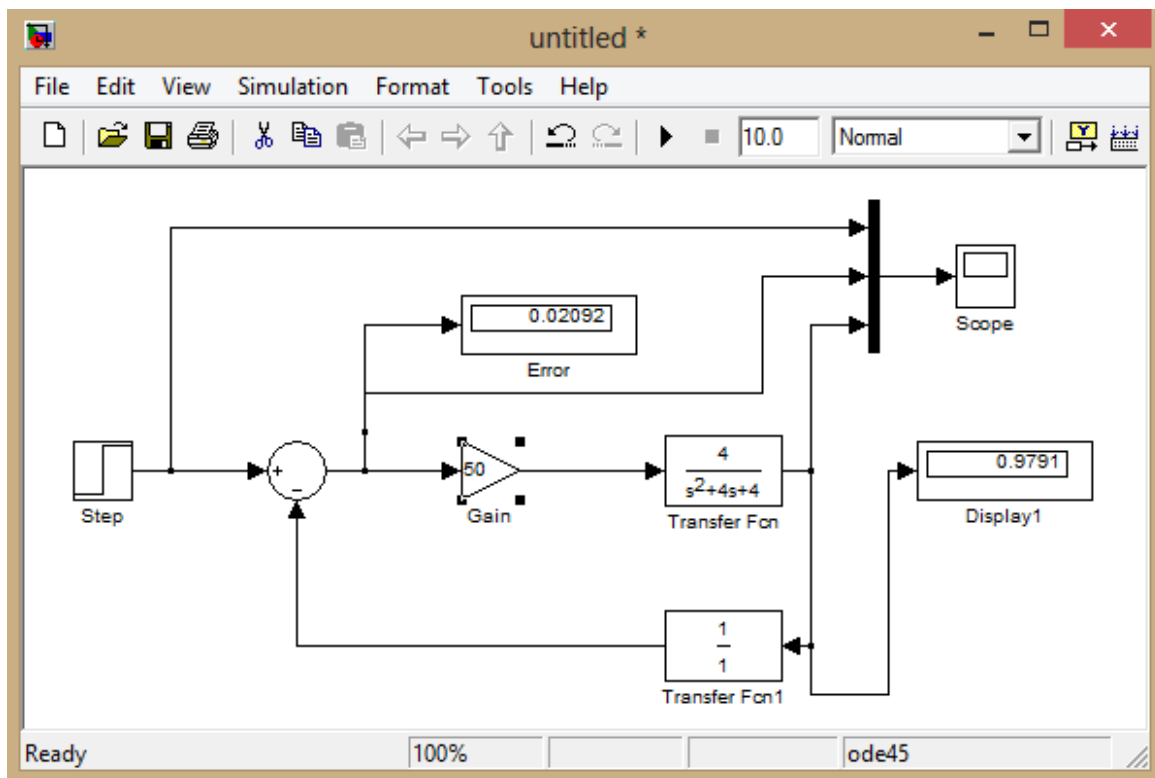
### 4) Gain Kp =15



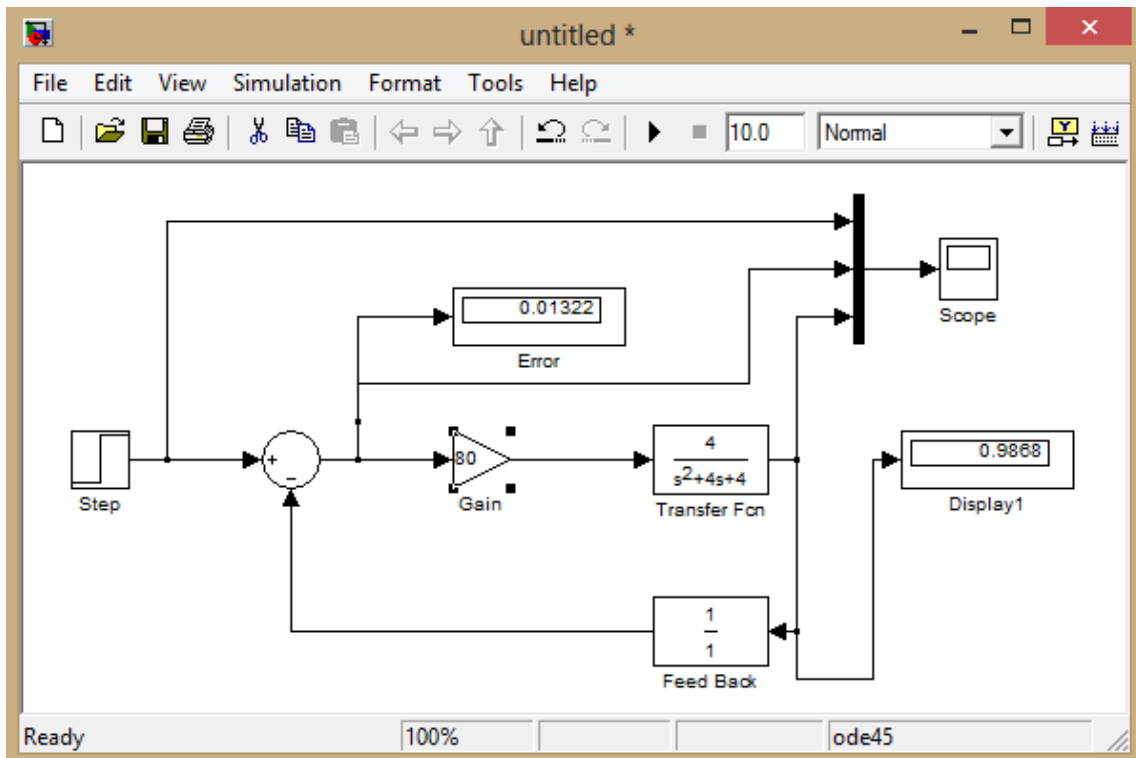
5) Gain  $K_p = 30$



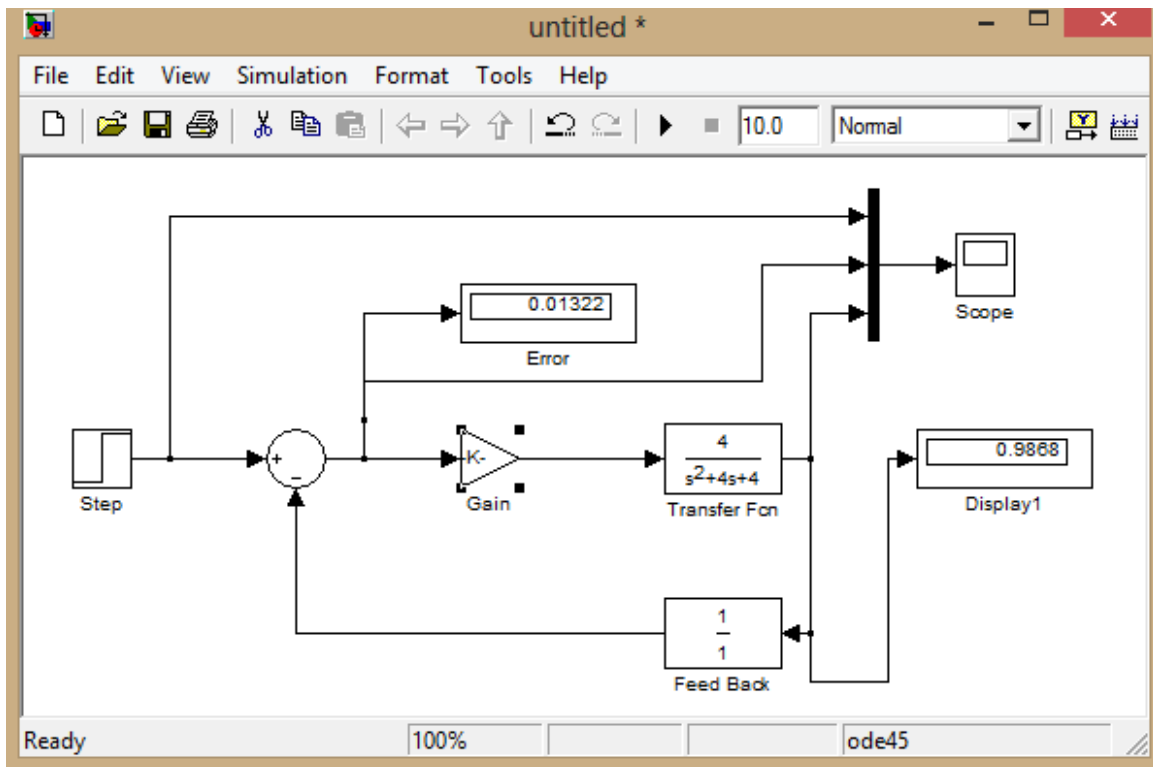
6) Gain  $K_p = 50$



7) Gain  $K_p = 80$

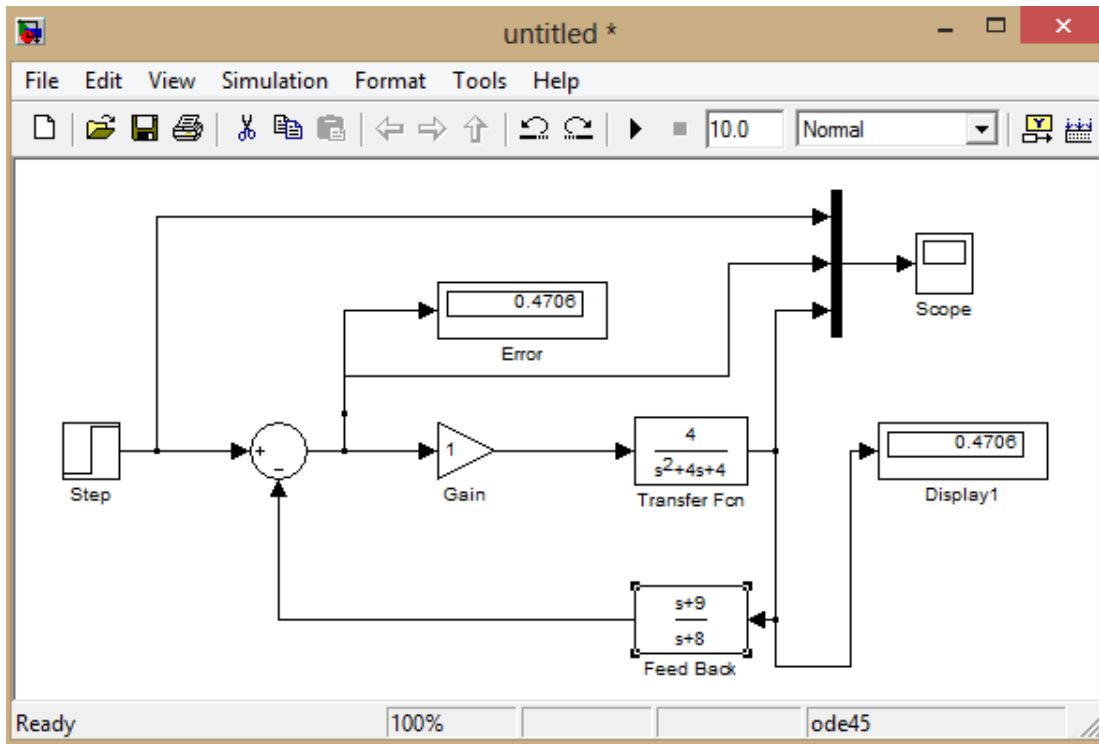


8) Gain  $K_p = 100$

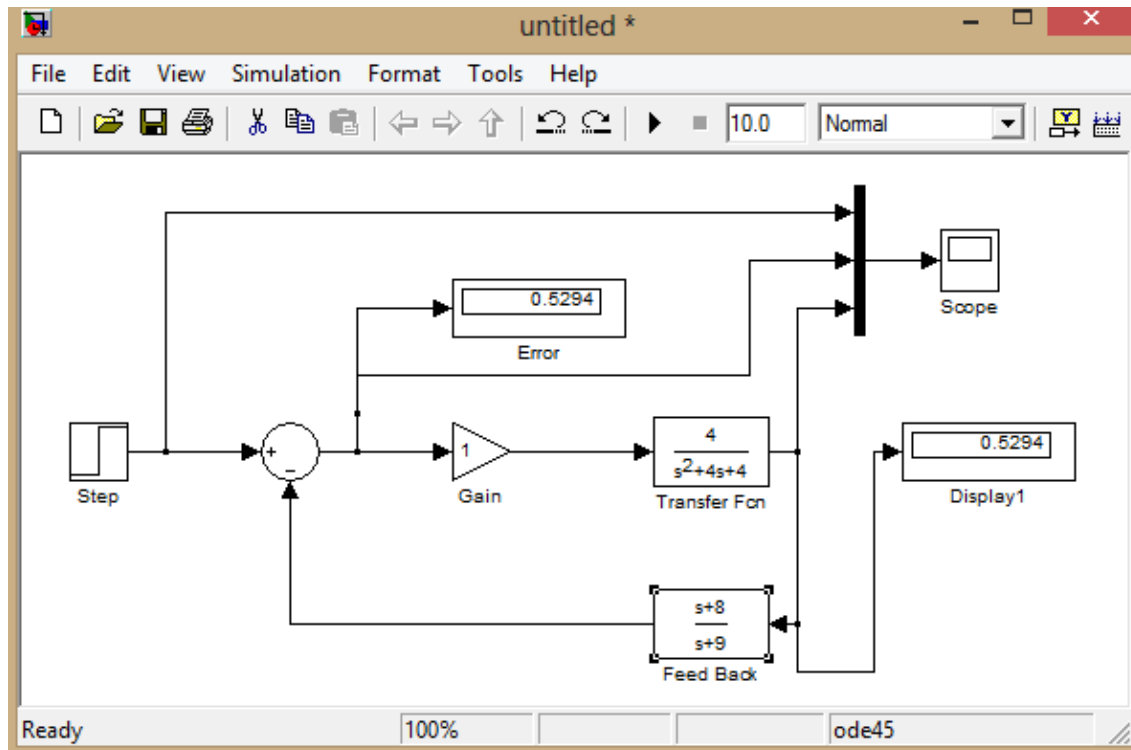


## Introducing Compensator

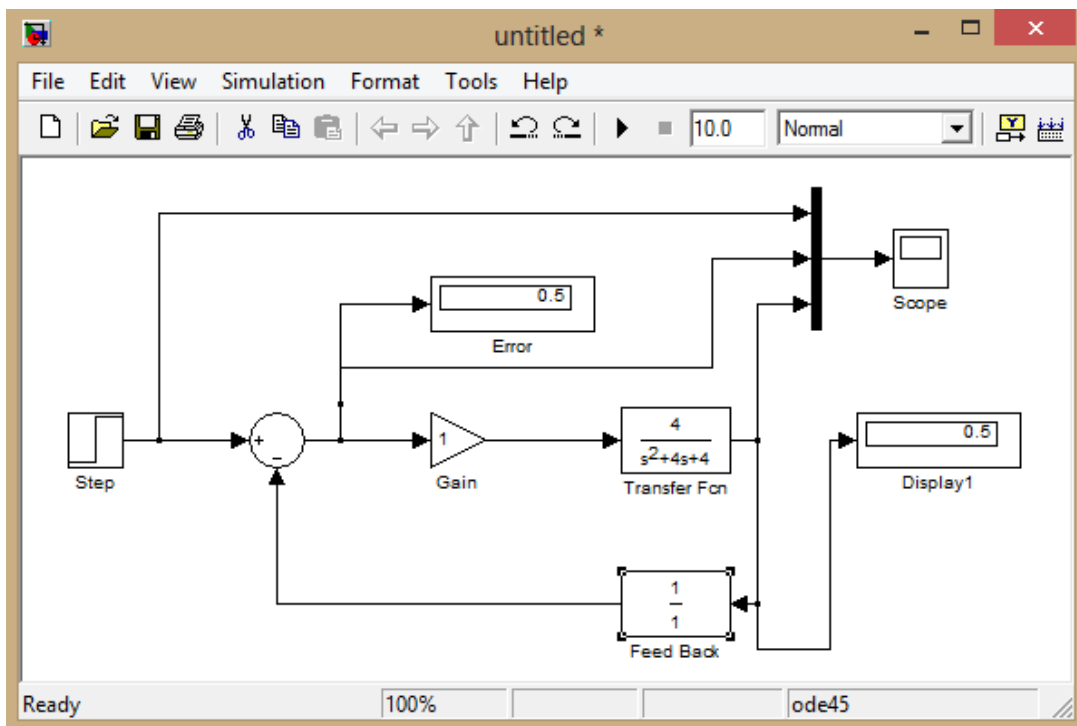
### Phase Lead Compensator $G(s) = \frac{s+9}{s+8}$



### Phase Lag Compensator $G(s) = \frac{s+8}{s+9}$



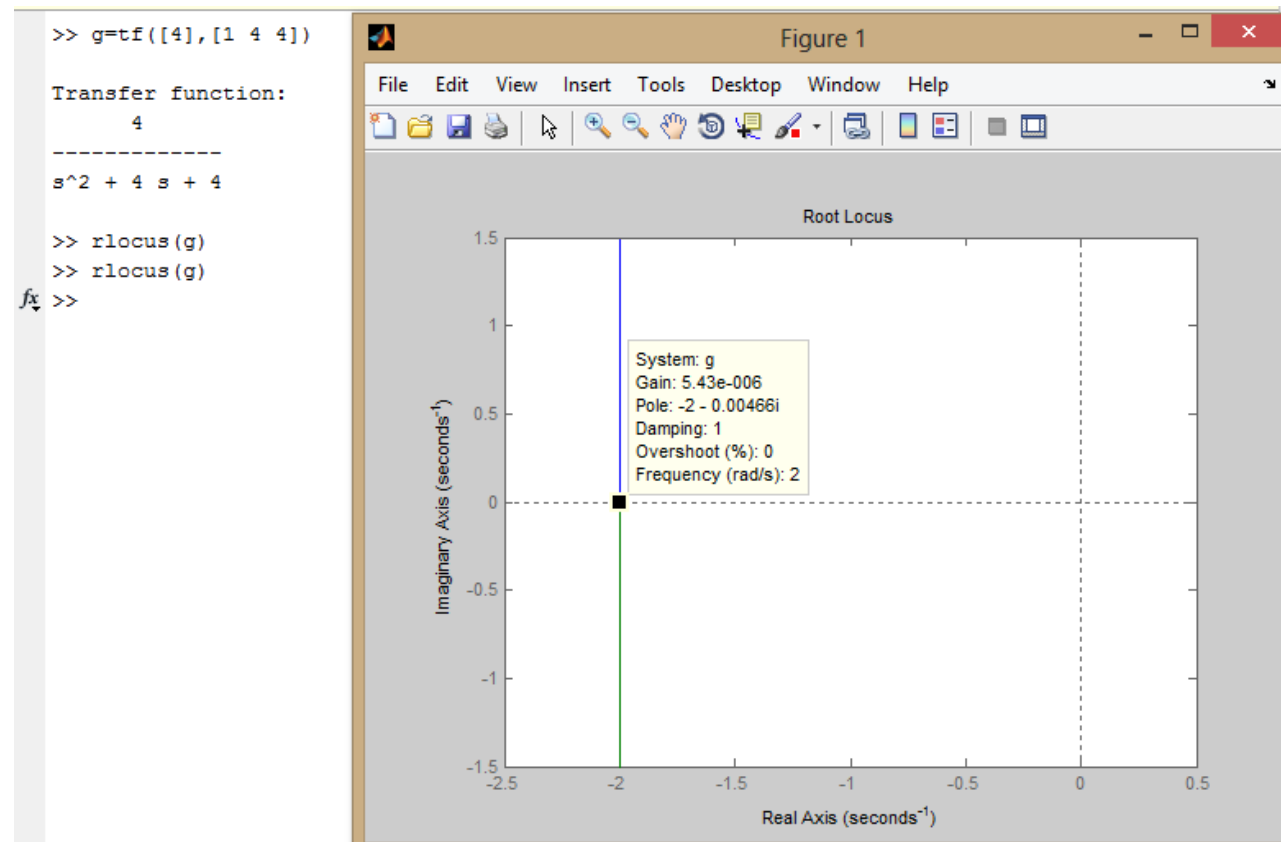
## When Compensator is not introduced



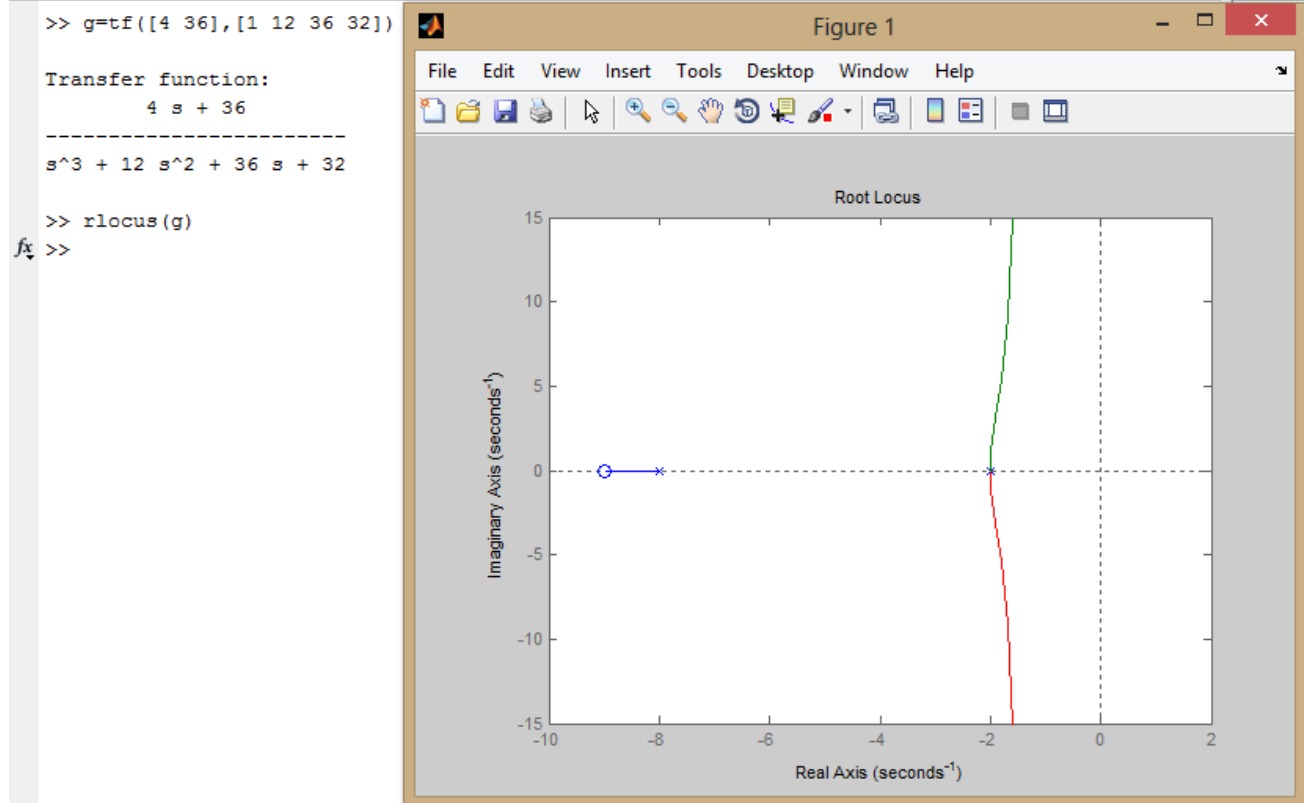
### Comments:

- All the error and output values obtained in Mat lab are same as we obtain in the previous lab.
- By introducing the compensator our error and output values changes.
- Also the stability of system also changes.

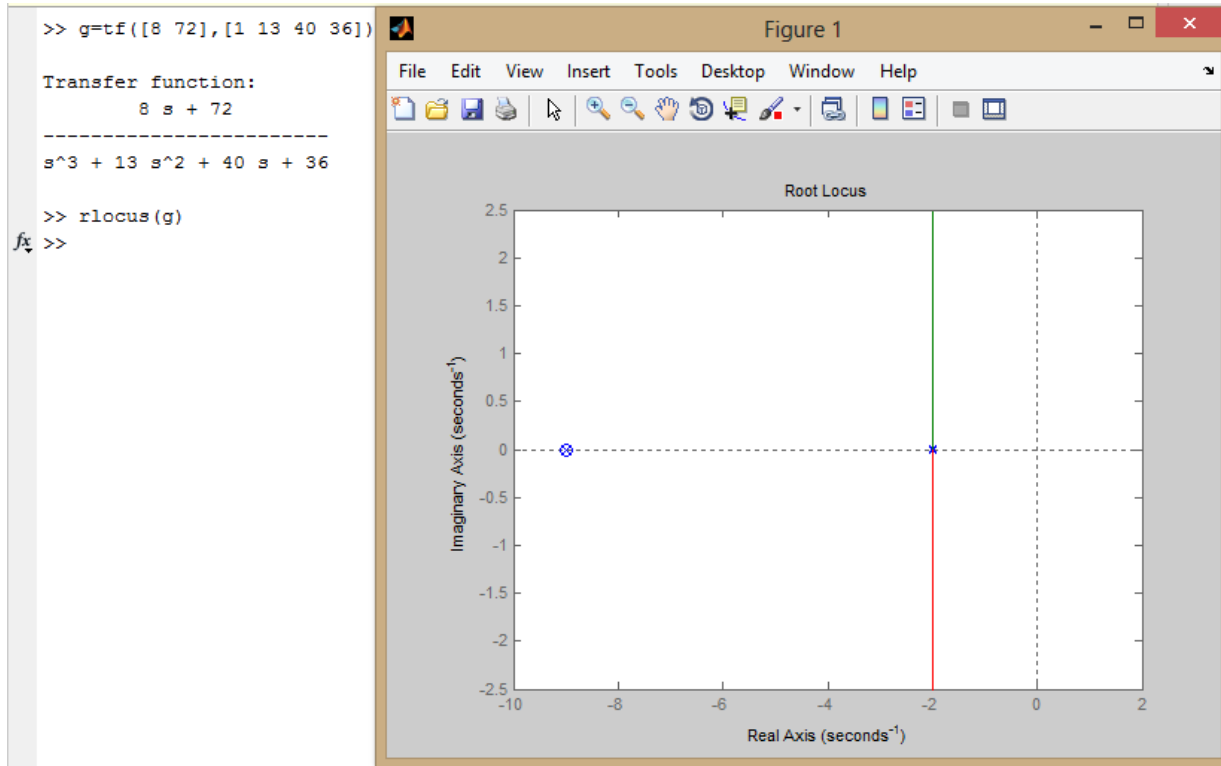
## When Compensator is not introduced



## When Compensator is introduced







**Comments:**

- When compensator is introduced system becomes more stable