



Consider the following close-loop transfer functions:

$$T_1(s) = \frac{Y(s)}{R(s)} = \frac{5(s+3)}{7s^2+56s+252}$$

$$T_2(s) = \frac{Y(s)}{R(s)} = \frac{5(s+3)}{(s+7)(s^2+8s+36)}$$

Now, answer the following using MATLAB:

1. Calculate the steady-state error if the input is step, ramp, and parabolic signals.
2. Plot the step, ramp, and parabolic response of the above systems, where every system on same (**properly labelled**) plot.
3. Find from figure, Percent Overshoot, Settling Time, Rise Time, and Peak Time.
4. Find damping frequency, natural frequency, and damping ratio.

Hints:

- **Properly labelled** means: Your figure must have the following: Title (“Assignment# 2: Time Response Comparison”), x-axis title, y-axis title, and legend.
- **Time range:** from 0 to 5 with step 0.01.

Assignment Rules:

- **All Figures** used must be included in the assignment.
- Assignment has to be typed. No handwriting.
- The assignment presented on Word/LaTex processor.

General Rules:

- Assignment can be done individually.
- Any duplicate assignments will get zero mark.
- Keep the comments in the assignment short and to the point.
- Late assignments will not be accepted whatever the excuse.