

Quiz #9

1. Use the following table and write a MATLAB script that will determine if a second order system is undamped, underdamped, overdamped or critically damped by looking at the damping ratio (ξ). For the damping ratio, have MATLAB randomly pick a real number using $2.5*\mathbf{rand}$.

Response	Damping Ratio
undamped	0
underdamped	$0 < \xi < 1$
critically damped	1
overdamped	>1

2. The electricity accounts of residents in a town follow the following structure.
 - If 500 units or less are used, cost is 2 cents per unit
 - If more than 500 but less than 1000 units are used, cost is 5 cents/unit for every unit in excess of 500.
 - There is a standard fee of \$5 if the number of units used is greater than 500 but less than 750 (this replaces the cost of 2 cents per unit from bullet 1)
 - There is a standard fee of \$10 if the number of units used is greater than or equal to 750 but less than 1000 (this replaces the cost of 2 cents per unit from bullet 1)
 - For example, 600 units cost $5+0.05*(units-500)$
 - If 1000 or more units are used the cost is 10 cents for every unit in excess of 1000 and there is a service fee of \$35.
 - For example, 1200 units cost $35+0.1*(units-1000)$

Test your script with the values: 200, 500, 700, 1250 units.

