QUESTIONS

- Write the complimentary (homogeneous) solutions (y_h) of the differential equations whose roots of the characteristic equations are given.

a. $r_1 = 1$, $r_2 = -1$, $r_3 = \frac{2}{3}$, $r_4 = -\frac{2}{3}$, $r_5 = 5$, $r_6 = -6$

b. $r_1 = r_2 = 0$, $r_3 = r_4 = -2$, $r_5 = 3i$, $r_6 = -3i$

c. $r_1 = r_2 = 2i$, $r_3 = r_4 = -2i$, $r_5 = i$, $r_6 = -i$

d. $r_1 = r_2 = r_3 = 2$, $r_4 = -2$, $r_5 = 2 - 3i$, $r_6 = 2 + 3i$

e. $r_1 = r_2 = r_3 = i$, $r_4 = r_5 = r_6 = -i$

f. $r_1 = r_2 = -1 + 3i$, $r_3 = r_4 = -1 - 3i$, $r_5 = 2$, $r_6 = -2$

g. $r_1 = r_2 = r_3 = 2 - i$, $r_4 = r_5 = r_6 = 2 + i$

h. $r_1 = \sqrt{2}$, $r_2 = r_3 = 2i$, $r_4 = r_5 = -2i$, $r_6 = \sqrt{3}$

i. $r_1 = i$, $r_2 = -i$, $r_3 = -2i$, $r_4 = 2i$, $r_5 = 3i$, $r_6 = -3i$

j. $r_1 = 1$, $r_2 = -1$, $r_3 = i$, $r_4 = -i$, $r_5 = 1 + i$, $r_6 = 1 - i$

k. $r_1 = 2$, $r_2 = r_3 = -1$, $r_4 = r_5 = r_6 = -3$

l. $r_1 = r_2 = r_3 = \frac{3}{2}i$, $r_4 = r_5 = r_6 = -\frac{3}{2}i$

m. $r_1 = r_2 = r_3 = -3 + 5i$, $r_4 = r_5 = r_6 = -3 - 5i$

n. $r_{1,2} = 1 \pm \sqrt{2}i$, $r_{3,4} = \pm\sqrt{2}i$, $r_{5,6} = -\sqrt{2}$

- Write the complimentary (homogeneous) solutions (y_h) of the following differential equations (y_h) .

a. $y''' - 3y'' - y' + 3y = 2e^{3x} + 7x$

b. $y''' + 2y'' - 4y' - 8y = 4x + 7$

c. $y''' - 3y'' + 3y' - y = 8xe^x + sinx$

d. $y^v + 9y''' = 11xsin3x$

e. $y^{lv} - 4y''' + 29y'' = 0$

f. $y''' - y'' - y' + y = 9e^{-x} + 4$

g. $y''' - 5y'' + 6y' = 9x - 3$