

< Highlight computer group IOY Technical college >

BAE 402 calculus Final Test < EACH 10 MARKS >

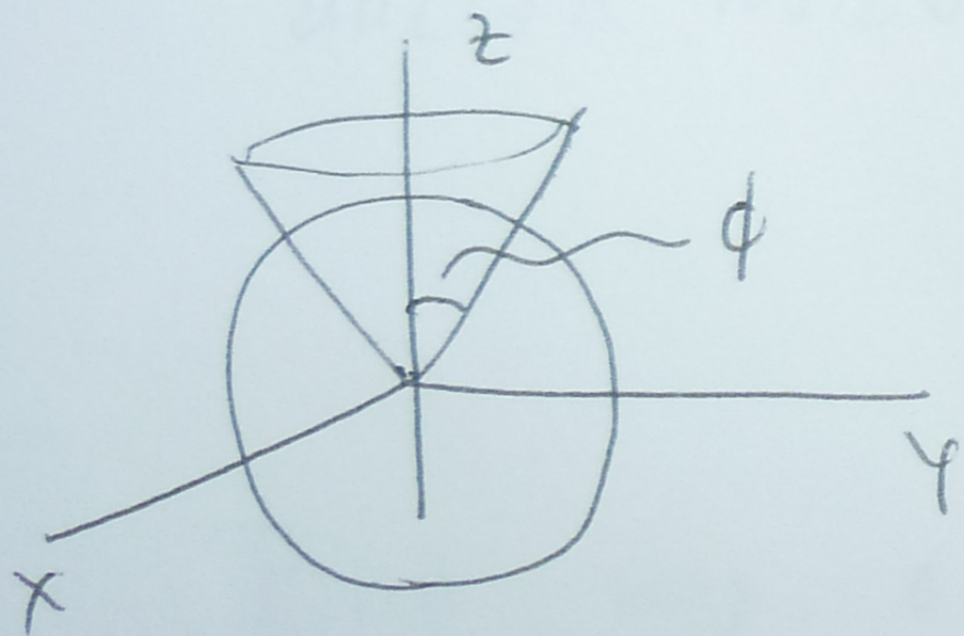
① SOLVE $y' - y = 3e^{2x}$, $f(x) = -1$, $r = 3e^{2x}$

② SOLVE THE DIFFERENTIAL EQUATION

$$y''' - 2y'' - y' + 2y = 0$$

③ FIND THE VOLUME CUT FROM THE SPHERE

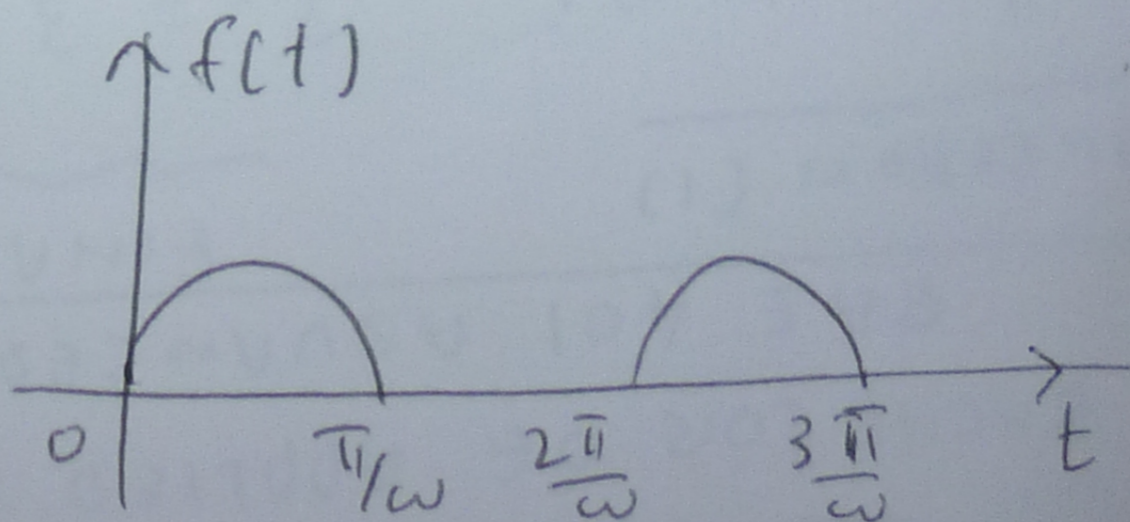
$$\rho = a, \text{ BY } \phi = \alpha$$



④ SOLVE $y'' - 3y' + 2y = 4t + e^{3t}$ $y(0) = 0$, $y'(0) = -1$

⑤ FIND LAPLACE TRANSFORM OF THE FOLLOWING FUNCTION WITH THE PERIOD $\frac{2\pi}{\omega}$

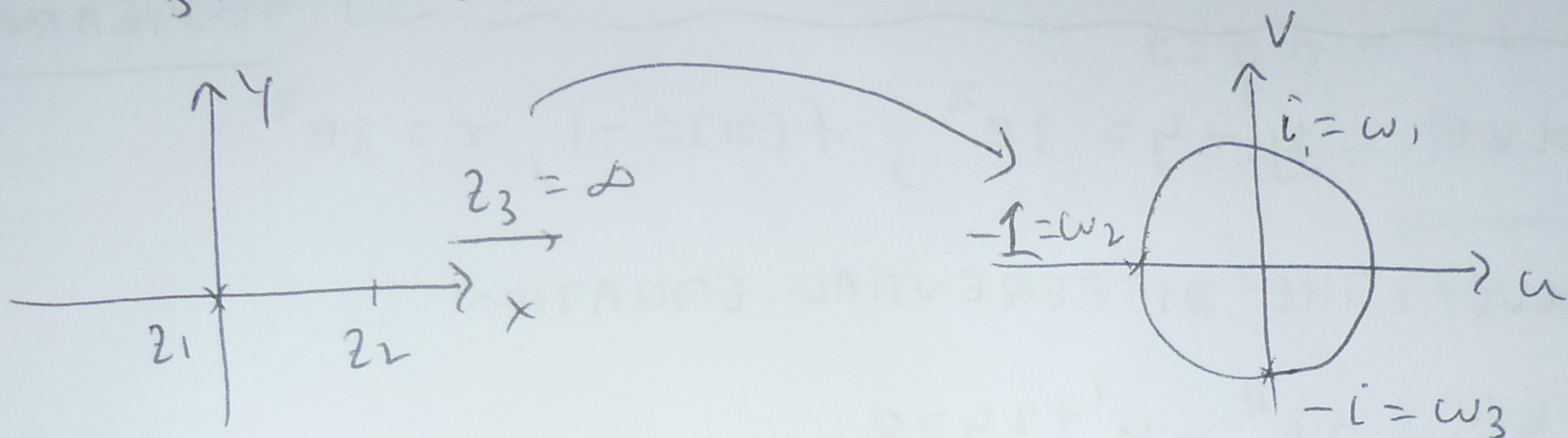
$$f(t) \begin{cases} \sin \omega t & \text{WHEN } 0 < t < \frac{\pi}{\omega} \\ 0 & \text{WHEN } \frac{\pi}{\omega} < t < \frac{2\pi}{\omega} \end{cases}$$



⑥ DETERMINE THE LINEAR MAPPING TRANSFORMATION

$$z = 0, z_1 = 1, z_3 = \infty \text{ ON TO } w_1 = i, w_2 = -1$$

$$w_3 = -i \text{ RESPECTIVELY}$$



⑦ SOLVE $\int_{-1}^1 \sqrt{1-x^2} dx$

⑧ SOLVE $\int \cos^6 x dx$

⑨ SOLVE $\oint_C \frac{1}{z-a} dz$

⑩ CHECK IF THE SEQUENCE $a_n = \cos \frac{n\pi}{2}$ IS CONVERGENT (OR) DIVERGENT.