Rifestion |=

(a) [i) 
$$\left| \frac{j+1}{j+13} \right| = \frac{1}{2}$$

$$2G(j) = 2(j+1) - 2(j+13) = 45^{\circ} - 30^{\circ} = 415^{\circ}$$

(ii)  $\left| G(100j) \right| = \left| \frac{100j+1}{100j+13} \right| = 0.9999$ 

$$2G(j) = 2(00j+1) - 2(100j+13) = 0.142^{\circ}$$

(iii)  $\left| G(0.1j) \right| = \left| \frac{0.1j+1}{0.1j+13} \right| = \frac{1000+1}{0.913} = 0.48$ 

$$2G(0.1j) = 2(0.1j+1) - 2(0.1j+13) = 2.141^{\circ}$$

(b) Magnitude(dB)

(c) Magnitude(dB)

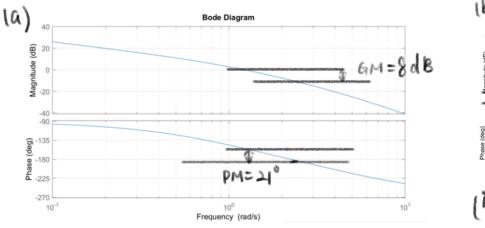
Place (deg)

70

45°

Tree (rad/s)

## Question 2



13

Bode Diagram

6,44 - 12 al 8

90

(80)
90

(80)
90

101

Frequency (rad/s)

The PM 3 AST the Same

K) If K is too large, the system would be unstable.