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Chemical Engineering

CHE 531 Assignment V

141EN0601020

$$K_p = 3$$

$$z_p = 1$$

$$z_f = 2$$

$$z_m = 3$$

$$\text{and } G_p = \frac{K_p}{(z_p s + 1)(z_f s + 1)(z_m s + 1)}$$

$$G_p = \frac{3}{(s+1)(2s+1)(3s+1)}$$

characteristic equation:

$$1 + G_p G_c G_f G_m = 0$$

$$1 + \frac{3}{(s+1)(2s+1)(3s+1)} \times K_c \times 1 \times 1 = 0$$

$$\frac{3K_c}{(s+1)(2s+1)(3s+1)}$$

$$1 + \frac{3K_c}{(s+1)(2s+1)(3s+1)} = 0$$

$$\frac{3K_c}{(s+1)(2s+1)(3s+1)}$$

$$(s+1)(2s+1)(3s+1) + 3K_c = 0$$

$$(s+1)(2s+1)(3s+1)$$

$$(s+1)(2s+1)(3s+1) + 3K_c = 0$$

$$[2s^2 + 3s + 1](3s+1) + 3K_c = 0$$

$$6s^3 + 2s^2 + 9s^2 + 3s + 3s + 1 + 3K_c = 0$$

$$6s^3 + 11s^2 + 6s + 1 + 3K_c = 0$$