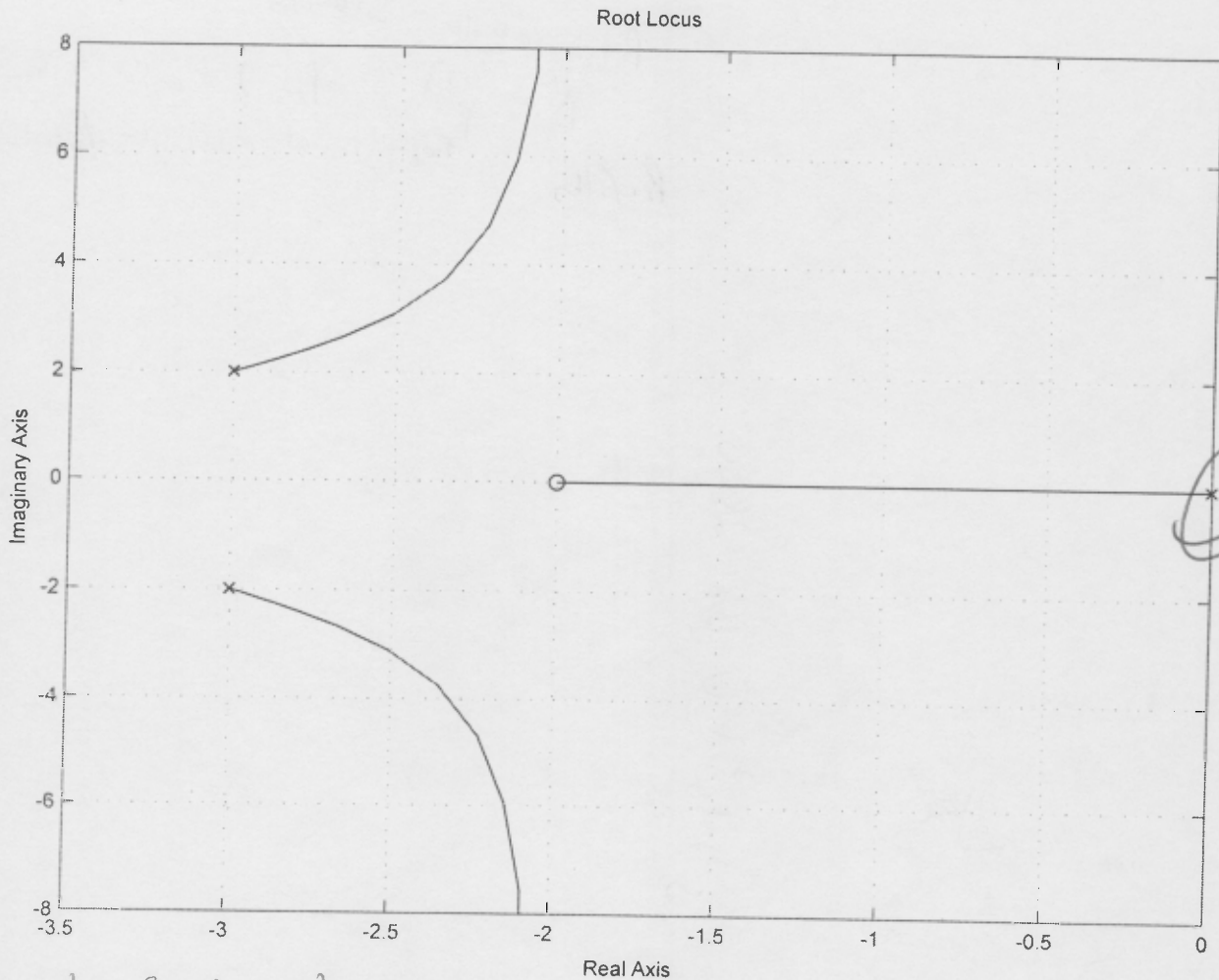


MECH 430
QUIZ

NAME Byron Tullis

Determine the characteristic equation for the system depicted in the root locus plot.

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roots zero -2
poles -3-2i
-3+2i

$$s \frac{(s+2)}{(s+(3+2i))(s+(3-2i))}$$

$$s^2 + 3s - 2i s + 3s + 9 - 6i + 2i s + 6i - 4i^2$$

$$s^2 + 6s + 13$$

$1 + k_p \left[\frac{s+2}{s^2+6s+13} \right] = 0$

$s^2 + 6s + 13 + k_p(s+2) = 0$

$s^2 + (6+k_p)s + (13+k_p) = 0$ $\circ k$