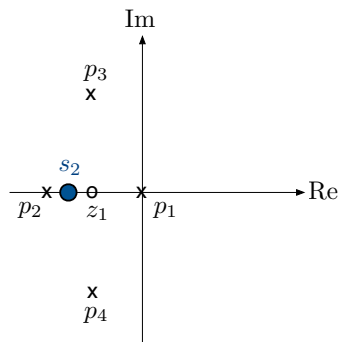## Rule D: Real Locus

Try more test points:



$$\angle(s_2 - z_1) = 180° \quad (s_2 < z_2)$$
$$\angle(s_2 - p_1) = 180° \quad (s_2 < p_1)$$
$$\angle(s_2 - p_2) = 0° \quad (s_2 > p_2)$$
$$\angle(s_2 - p_3) = -\angle(s_1 - p_4)$$
(conjugate poles cancel)

$$\angle(s_2 - z_1) - [\angle(s_2 - p_1) + \angle(s_2 - p_2) + \angle(s_2 - p_3) + \angle(s_2 - p_4)]$$
$$= 180° - [180° + 0° + 0°] = 0° \qquad \times s_1 \text{ is not on RL}$$