Comparing Deterministic Duopoly Outcomes

Demand: $P = a - bQ;\ Q = q_1 + q_2$

Costs: $TC_i = f_i + c_i q;\ \text{MC} = c_1 = c_2$

Numeric outcomes assume $a = 24$, $b = 1$, $c = 0$, $f = 0$

	Monopoly Joint Profit Max.		Cournot		Stackelberg		Perfect Competition	
q_1	$\left(\frac{1}{4}\right)\left(\frac{a-c}{b}\right)$	6	$\left(\frac{1}{3}\right)\left(\frac{a-c}{b}\right)$	8	$\left(\frac{1}{2}\right)\left(\frac{a-c}{b}\right)$	12	$\left(\frac{1}{2}\right)\left(\frac{a-c}{b}\right)$	12
q_2	$\left(\frac{1}{4}\right)\left(\frac{a-c}{b}\right)$	6	$\left(\frac{1}{3}\right)\left(\frac{a-c}{b}\right)$	8	$\left(\frac{1}{4}\right)\left(\frac{a-c}{b}\right)$	6	$\left(\frac{1}{2}\right)\left(\frac{a-c}{b}\right)$	12
Q	$\left(\frac{1}{2}\right)\left(\frac{a-c}{b}\right)$	12	$\left(\frac{2}{3}\right)\left(\frac{a-c}{b}\right)$	16	$\left(\frac{3}{4}\right)\left(\frac{a-c}{b}\right)$	18	$\left(\frac{a-c}{b}\right)$	24
P	$\left(\frac{1}{2}\right)(a+c)$	12	$\left(\frac{1}{3}\right)(a+2c)$	8	$\left(\frac{1}{4}\right)(a+3c)$	6	c	0
π_1	$\left(\frac{1}{8}\right)\left(\frac{(a-c)^2}{b}\right) - f$	72	$\left(\frac{1}{9}\right)\left(\frac{(a-c)^2}{b}\right) - f$	64	$\left(\frac{1}{8}\right)\left(\frac{(a-c)^2}{b}\right) - f$	72	$-f$	0
π_2	$\left(\frac{1}{8}\right)\left(\frac{(a-c)^2}{b}\right) - f$	72	$\left(\frac{1}{9}\right)\left(\frac{(a-c)^2}{b}\right) - f$	64	$\left(\frac{1}{16}\right)\left(\frac{(a-c)^2}{b}\right) - f$	36	$-f$	0
$\sum \pi$	$\left(\frac{1}{4}\right)\left(\frac{(a-c)^2}{b}\right) - f$	144	$\left(\frac{2}{9}\right)\left(\frac{(a-c)^2}{b}\right) - f$	128	$\left(\frac{3}{16}\right)\left(\frac{(a-c)^2}{b}\right) - f$	108	$-f$	0