8.7 8.8 Inefficiency in the Partner Game

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A

$\pi = e_1 + e_2 + \frac{1}{4}e_1e_2 - \frac{1}{2}e_1^2 - \frac{1}{2}e_2^2$

$\frac{d\pi}{de_1} = 1 + \frac{1}{4}e_2 - e_1 = 0$

$e_1 = 1 + 1/4\, e_2$

↳ same for e_2 (but flipped)

↳ $e_1 = 1 + 1/4\, e_1$

$e_1 = 4/3 = e_2$

$\pi = 4/3 + 4/3 + 1/4 \cdot 4/3 \cdot 4/3 - \frac{1}{2}(4/3)^2 - 1/2(4/3)^2 = 4/3$

$\pi_1 = \pi_2 = 2/3$

B

$\pi_1 = 1/2(4/7 + 4/7 + \frac{1}{4}(4/7 \cdot 4/7)) - \frac{1}{2}(4/7)^2 \approx 22/49$

↳ $< 2/3$