

BUBL P, DEW P, BUBL T, DEW T: the same equation, specified four ways

one equation, four questions — worked at x_1 or $y_1 = 0.4$ (methanol)

calculation	fixed	solved for	the equation that closes it	worked answer	what has to iterate, and why
BUBL P	T, x_i	P, y_i	$P = \sum_i x_i \gamma_i P_i^{\text{sat}}$	$P = 71.646 \text{ kPa}$ $y_1 = 0.7353$	explicit — no loop 0 iterations
DEW P	T, y_i	P, x_i	$1/P = \sum_i y_i / (\gamma_i P_i^{\text{sat}})$	$P = 42.197 \text{ kPa}$ $x_1 = 0.0787$	loop on x : y_i needs the answer 15 composition steps
BUBL T	P, x_i	T, y_i	$\sum_i x_i \gamma_i P_i^{\text{sat}}(T) = P$	$T = 338.163 \text{ K}$ $y_1 = 0.7372$	loop on T : P_i^{sat} not yet computable 9 temperature steps
DEW T	P, y_i	T, x_i	$\sum_i y_i / (\gamma_i P_i^{\text{sat}}(T)) = 1/P$	$T = 350.814 \text{ K}$ $x_1 = 0.0838$	loop on T with the x loop inside it 13 outer $\times$ 75 inner steps

