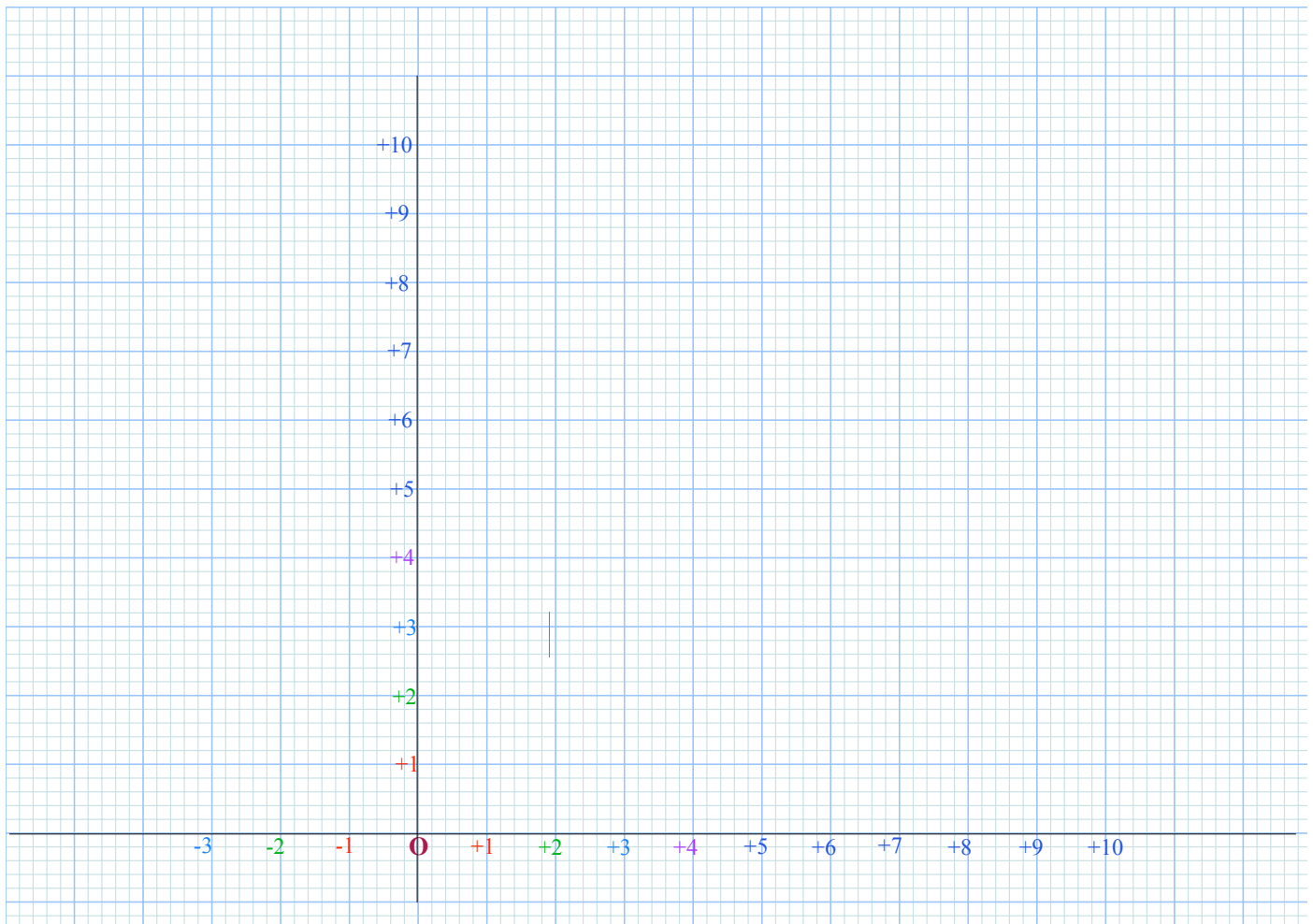Read Unit 3 (*SRQM by Ruler&Compass*) thru page 28.

1.In class[†] we constructed a per-space-time plots of relativistic parameters *frequency* $\upsilon_{Phase}^{2\text{-}CW}$ *and* $\upsilon_{Group}^{2\text{-}CW}$ and *wavenumbers* κ_{Phase}^{2-CW} , κ_{Group}^{2-CW} derived from a Doppler shifted 600Thz 2-CW (pair of interfering coherent waves) and from these we found wave velocities $V_{Phase}^{2\text{-}CW}$ *and* $V_{Group}^{2\text{-}CW}$. This example involved an intrepid laser jockey Bob going along the beam path at a speed of $^3/_5$ that of light relative to Alice and Carla's 600THz sources. The Doppler blue-shift factor due to his motion was *b=____?* and the red-shift factor was ____?

Now redo this exercise for the case that Bob has a speed of *(⅘)c* relative to the 600THz sources. Use per-spacetime graph paper provided in class[†] to find 2-CW parameters $\upsilon_{Phase}^{2\text{-}CW}$, $\upsilon_{Group}^{2\text{-}CW}$, κ_{Phase}^{2-CW} , κ_{Group}^{2-CW} , velocities $V_{Phase}^{2\text{-}CW}$ *and* $V_{Group}^{2\text{-}CW}$ and inverses $\tau_{Phase}^{2\text{-}CW}$, $\tau_{Group}^{2\text{-}CW}$, λ_{Phase}^{2-CW} , λ_{Group}^{2-CW} and Doppler factors. Make table of numerical values and general case formulas in terms of rapidity ρ. Check these numbers against your graph.

[†] Class step-by-step constructions are in Lecture 24 ranging from p. 56 to p.60 or from p. 73 to p.80.

Better version of graph available in class or online.