An exponential line passes through (2.6, 4.8) and (8.82, 38.86). It represents the number of brain cells in a forming mouse fetus (y) over time in half days (x).

(D: 0≤x≤45; R: 2≤y≤70,000,000).

A linear line passes through (2.6, 4.8) and (11.35, -12.7).

It represents the money in dollars left of Tizkip's coffee card (y) over time in half days (x). (D: 0≤x≤5; R: 0≤y≤10)

A quadratic line, modeled by y = -2x² + 20x + 18, represents the popularity of a Doge meme in terms of the (y) million of people who look at it every (x) half days.

(D: 0≤x≤10.5; 0≤y≤68).

Find these lines' equations, x- and y- intercepts, and (where applicable) vertex/vertices. Verify all values. Use advanced complete the square to show work and/or verify work.

Then, replace the "equal" signs of each equation with inequality symbols to find the combination that would make region IV the solution for all three lines.

Make your work neat, orderly, and well-labeled so that I, or any other grader, can easily follow and understand your work. There is no need to rush.