

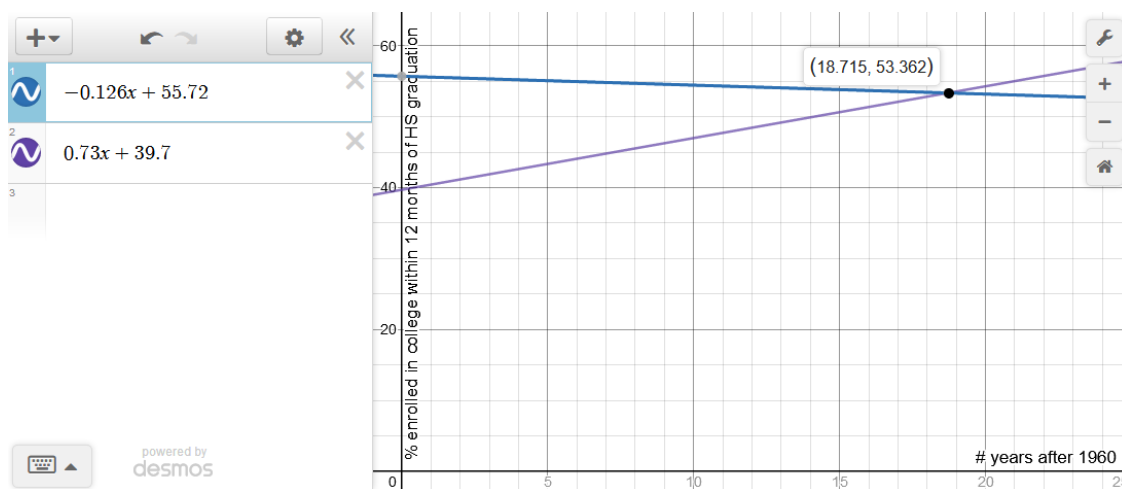
College Algebra, Section 2.3, #44

Systems of Linear Equations in Two Variables

College Enrollment Suppose the percent of males who enrolled in college within 12 months of high school graduation is given by $y = -0.126x + 55.72$ and the percent of females who enrolled in college within 12 months of high school graduation is given by $y = 0.73x + 39.7$, where x is the number of years after 1960. Use graphical methods to find the year these models indicate that the percent of females equaled the percent of males. (Source: Statistical Abstract of the United States)¹

We're asked to use "graphical methods" to solve this. That means that we'll graph both equations and look for the year (x -value) where the percents (y -values) are equal. In other words, we are looking for where the lines cross.

In this graph, the first equation (displayed in red) represents males and the second equation (displayed in blue) represents females.



The lines cross at the point $(18.715, 53.362)$ which tells us that 18.7 years after 1960, the percent of females and the percent of males enrolled in college after high school graduation were equal (each 53.4%).

But we are asked to "find the year" that these percents are equal and we need to be careful. 18 years after 1960 takes us to the end of 1978 and that extra 0.7 years washes us over into the next year.

So, the year when these models indicate that the percent of females equaled the percent of males who enrolled in college within 12 months of high school graduation is 1979.

¹Harshbarger/Yocco, *College Algebra In Context*, 5e, p. 136, #44.