4.3 Line Point Distance and Parametrics

* Looking over Question 4.10

* 25 Minutes to work on 4.11

* First Look at Parametrics

* Basic Example of a Parametric Equation

** Looking at 4.10

![Graph showing lines and points](Image)

Find intersection:

\[ y = -\frac{5}{9}(x-30) \]
\[ y = \frac{9}{5}x + 0 \]

\[-\frac{5}{9}(x-30) = \frac{9}{5}x \]

\[ (7.07, 12.73) \]

** Equation of \( FR \)

\[
\begin{align*}
\text{m} &= \frac{45 - 0}{25 - 0} \\
&= \frac{45}{25} \\
&= \frac{9}{5} \\
\end{align*}
\]

\[ y = \frac{9}{5}x + 0 \]

** Equation of \( CP \)

\[
\begin{align*}
\text{m} &= \frac{-5}{9} \\
\text{p} &= (30, 0) \\
y &= -\frac{5}{9}(x-30) + 0
\end{align*}
\]
4.3 Parametric Equations

-Equations that involve a "parameter"

Expressing coordinates in terms of a "third" variable

Sometimes it is easier to think of variable related to a third variable instead of related to each other
4.3 Parametric Equations Intro

Example #1 - 1 coordinate example

Fenway is 1200 feet from the front door of his house. Fenway runs at a rate of 10 feet per second. Sullivan is in the same line with Fenway and the front door, except he is 2000 feet away. But Sullivan runs at a rate of 15 feet per second.

Impose a one dimensional coordinate system with the origin at the door.

a) give equations for both of thier positions relative to time

\[ x_F = 1200 - 10t \]
\[ x_S = 2000 - 15t \]

b) give an equation for how far away they are from each other

\[ d = x_S - x_F \]
\[ d = 2000 - 15t - [1200 - 10t] \]
\[ d = 800 - 5t \]

Assignment (Due "Thursday, 10/1")

1) The following sections should be read
   4.5 4.1 - 4.4, 4.7 - 4.10

2) Chapter 4 Problems Packet
   a) 4.1 / 4.2 / 4.4 / 4.9 / 4.5 / 4.10
      b) 4.11 / 4.6 / 4.8

   -packet should be nice neat collection of complete and well organized work. If you want to "scratch" them out first, that is probably a good idea

3) Be ready to get going first thing next class