4.2 Forms of Lines and Intersection

* Taking a quick look at the algebra of 4.2
* Linear Models: Look over 4.5
* Point-Line Distance
* "Closest Point to..."
* Assignment Time - Only a small add

\[
\begin{align*}
\chi &= \frac{1}{\alpha + \frac{1}{2}} \\
\frac{1}{\alpha + \frac{1}{2}} &= 2^{-\frac{1}{2}} x = 1 + \alpha x \\
\alpha x &= \left(\chi + \frac{1}{2}\right) x \\
\chi &= \left(\frac{\alpha + \frac{1}{2}}{\alpha + \frac{1}{2}}\right) \chi
\end{align*}
\]
4.2 Distance from Line to Point

-When measuring point to point distance, you simply impose a coordinate system and use the distance formula.

-When measuring distance from a point to a line, your line of measurement is:
  a) perpendicular to the original line
  b) passes through the original point

-For the final distance, you need to:
  c) find the intersection of the line of measurement and original line (this will be a point)
  d) find the point to point distance between the point of intersection and the original point
4.2 Distance from a Line to a Point

Example #1
How far is it from the line $y = \frac{3}{10}x - 4$ and the point $(-8, 9)$

Equation of Distance Line
$p = (-8, 9)$ $m = -\frac{10}{3}$

$y = -\frac{10}{3}(x + 8) + 9$

Intersection Point

$y = \frac{3}{10}x - 4$ and $y = -\frac{10}{3}(x + 8) + 9$

$d = \sqrt{(\theta + 8)^2 + (\Delta - 9)^2}$

$\theta = \circ$

Assignment (Due "Tuesday 9/29")

1) The following sections should be read
   4.10 4.1 - 4.4, 4.7 - 4.9

2) Chapter 4 Problems Packet
   a) 4.1 / 4.2 / 4.4 / 4.9 / 4.5

   b) 4.10

   -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!