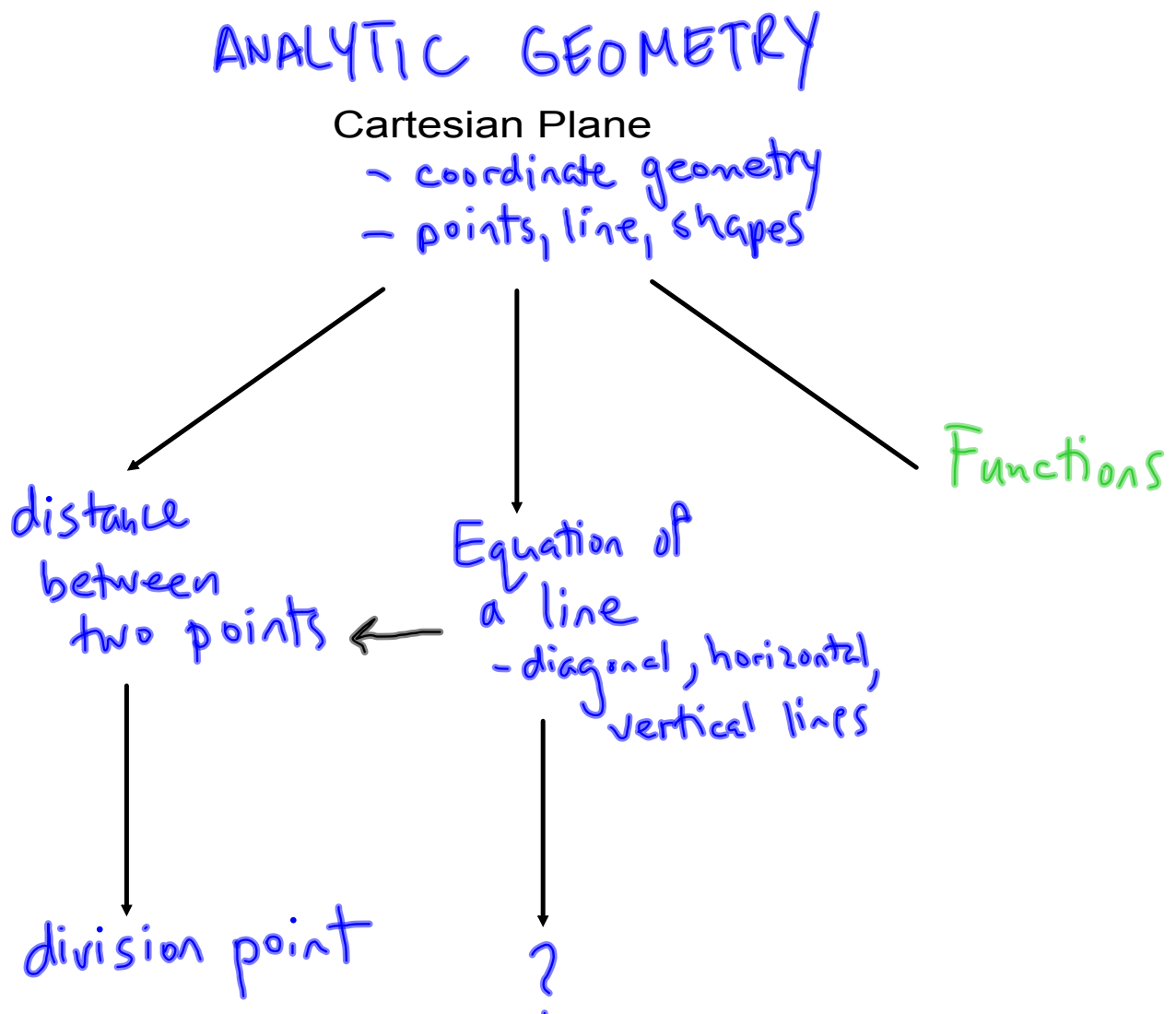


Equation of a Line

Goal:

- to write the rule/equation of any line
in the Cartesian Plane

Let's look at some of the concepts we are studying in a concept map:



To review, the equation of a line:

all diagonal lines:
(1st-degree polynomial
function)

$$y = ax + b$$

a = rate of change
(slope)

b = initial value
(y -intercept)

this form is called the function form.

Ex: Find the equation of a line that passes through the point (2,5) and (-3,10).

$$a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{10 - 5}{-3 - 2} = \frac{5}{-5} = -1$$

$$y = -x + b$$

plug in (2,5) or (-3,10)

$$5 = -(2) + b$$

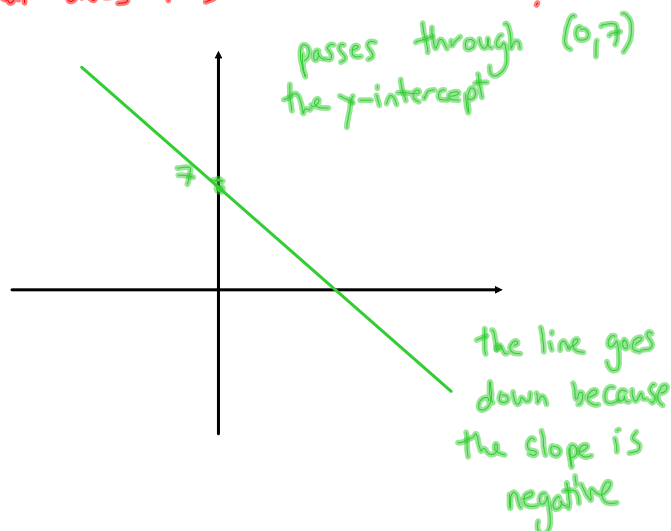
$$5 = -2 + b$$

$$+2 \quad +2$$

$$7 = b$$

Write the equation $y = -x + 7$

What does this line look like?



Homework p.28 #1, #2 part I)

From Handout

#8. House (100, 400) Warehouse (437.5, 950)
divides into ratio 3:5 Hunting grounds (?, ?)
part-to-part distance?

$$x_p = x_1 + \frac{a}{a+b}(x_2 - x_1)$$

$$437.5 = 100 + \frac{3}{8}(x_2 - 100)$$

$$\frac{337.5}{\frac{3}{8}} = \frac{3}{8}(x_2 - 100)$$

$$900 = x_2 - 100$$

$$1000 = x_2$$

$$y_p = y_1 + \frac{a}{a+b}(y_2 - y_1)$$

$$950 = 400 + \frac{3}{8}(y_2 - 400)$$

$$-450 = \frac{3}{8}(y_2 - 400)$$

$$-450 = \frac{3}{8}y_2 - 525$$

$$\frac{75}{\frac{3}{8}} = \frac{3}{8}y_2$$

$$200 = y_2$$

Hunting Grounds
(1000, 200.)

$$d(H, H.G.) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

= ...