

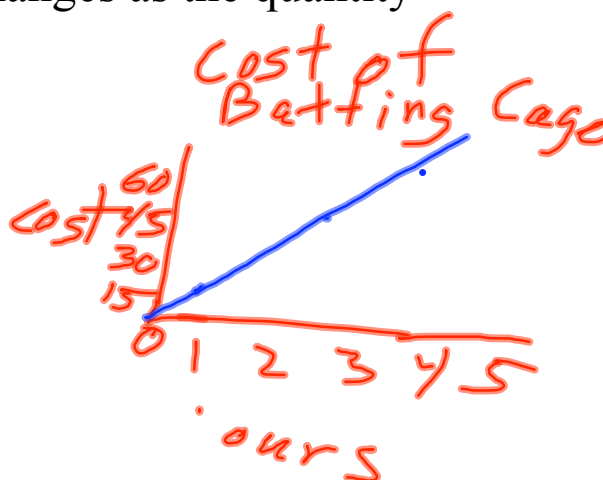
5.1 – RATE OF CHANGE/SLOPE:

Rate of change – 2 items are dependent. Rate of change explains how the amount of an item changes as the quantity of another item changes.

Explain a graph in real life terms.

Use a batting cage:

Hours	Cost
1	15
3	45
4	60



The rate of change is that each hour costs \$15. Hours would be the x and Cost would be the y to graph the ordered pairs.

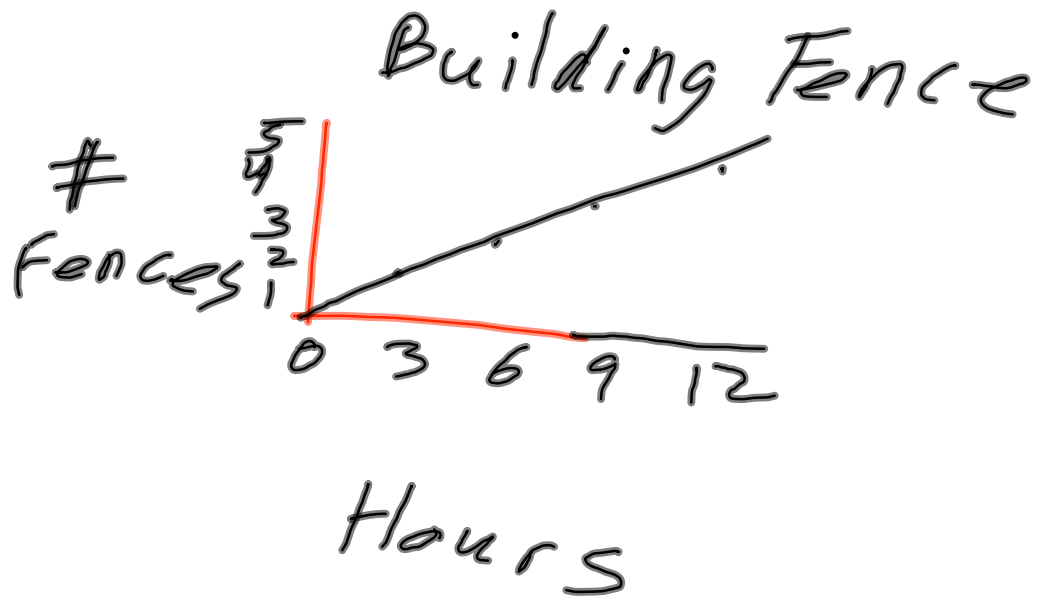
Black wk bk p. 139 #1

hours

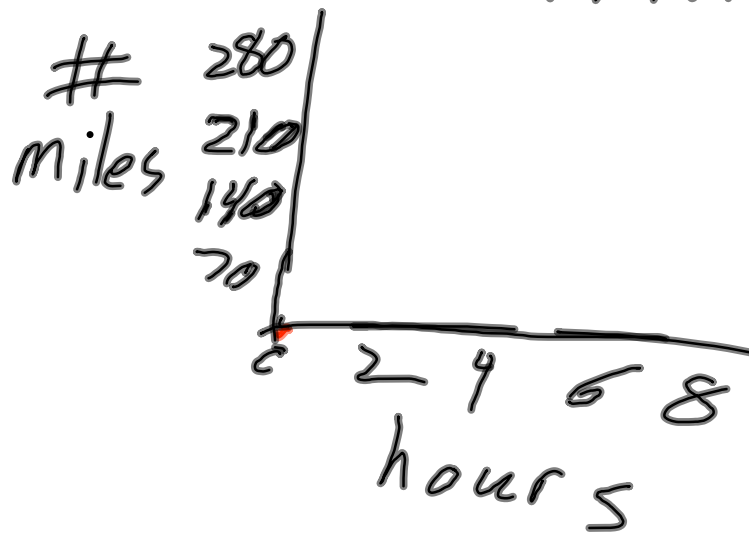
Fences



Every 3 hours is 1 fence



Driving



5.1 - SLOPE:

Slope is the rate of change of a line. Slope is represented by the variable m :

$$\text{Slope} = m = \frac{\text{rise } y_2 - y_1}{\text{run } x_2 - x_1}$$

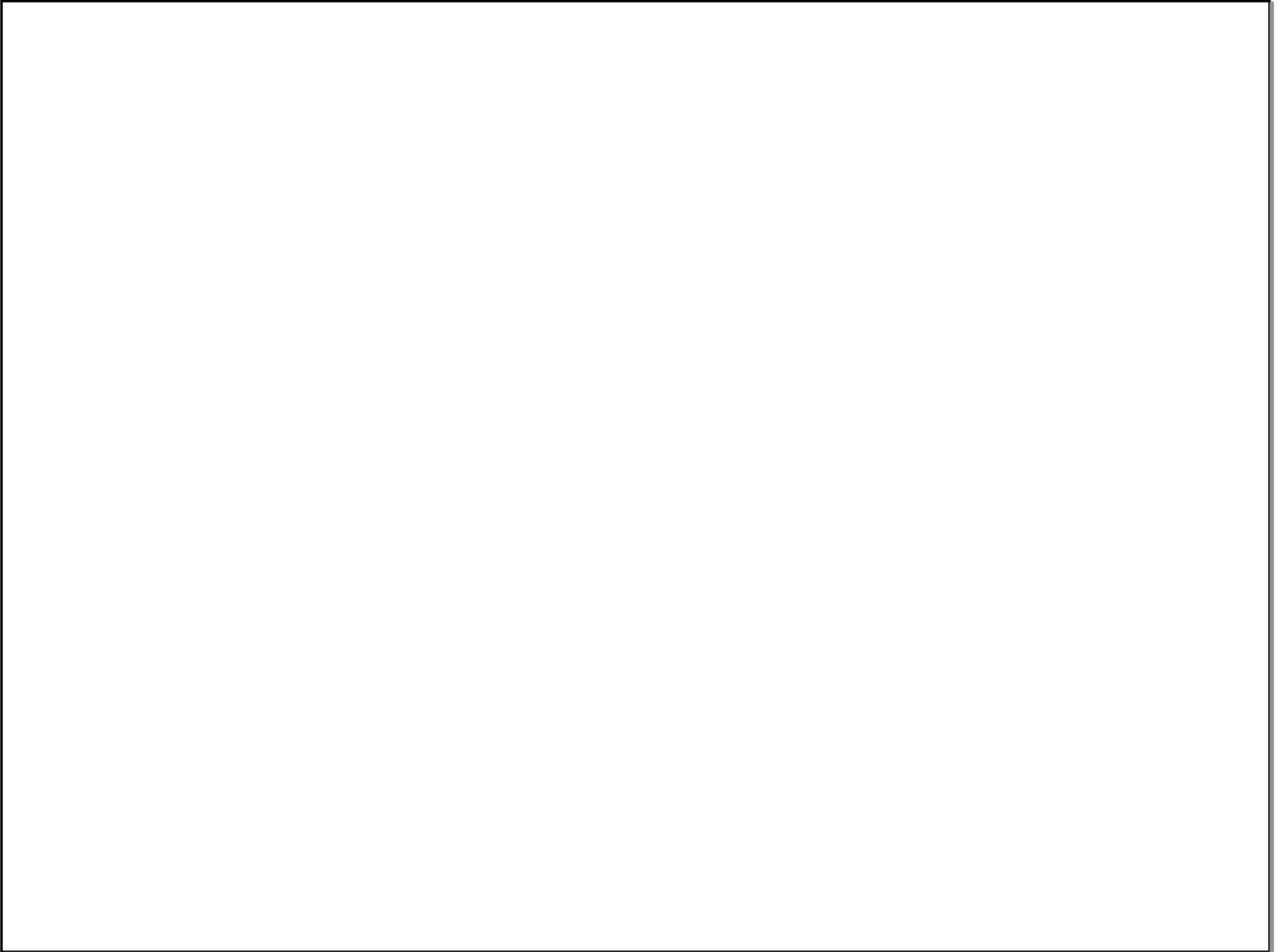
Take 2 ordered pairs from the line.

(3, 4) (5, -1) Plop the points in the equation and calculate.

x_1, y_1

x_2, y_2

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - 4}{5 - 3} = \frac{-5}{2}$$



Calculate slope:

$$\begin{matrix} (-3, -4) & (-2, -6) \\ x_1 & x_2 \\ y_1 & y_2 \end{matrix}$$

$$m = \frac{-6 - (-4)}{-2 - (-3)} = \frac{-6 + 4}{-2 + 3} = \frac{-2}{1} = -2$$

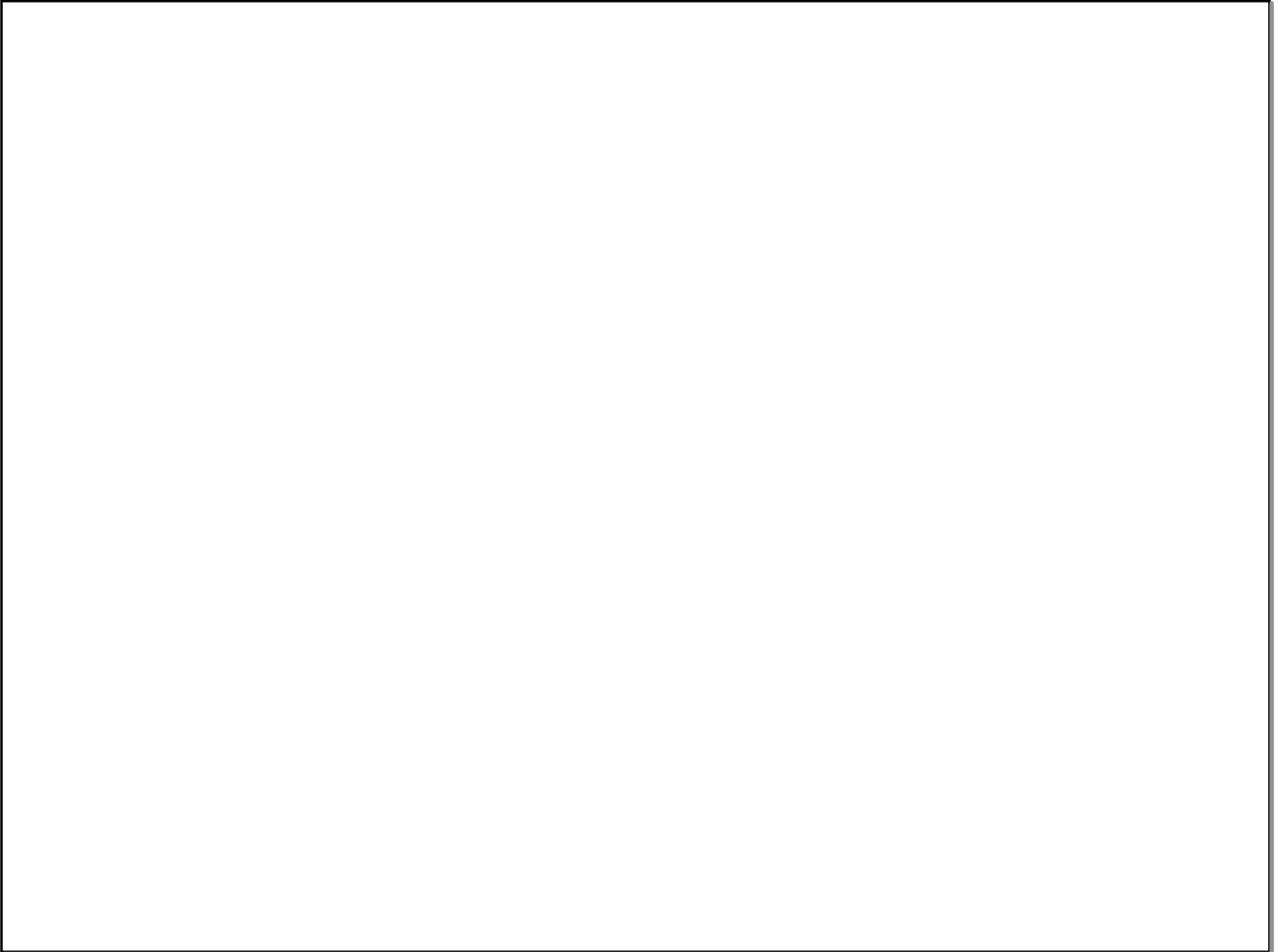
$$m = \frac{-1 - 4}{5 - 3} = \frac{-5}{2}$$

The line goes down 5 along the y-axis for each 2 units you move to the right on the x-axis.

*** You can also find slope visually.

The slope of a line going UP from left to right is INCREASING.

The slope of a line going DOWN from left to right is DECREASING.



5.1 – SLOPE WHEN GIVEN A GRAPH:

Choose 2 points from the line and then plop in the slope formula.

Calculate the slope formula for horizontal or vertical formulas.

The slope of a horizontal line is 0. The y's do not change so the numerator in the formula is 0.

The slope of a vertical line is undefined. The x's do not change so the denominator in the formula is 0. Any 0 in the denominator of a fraction makes it undefined.