

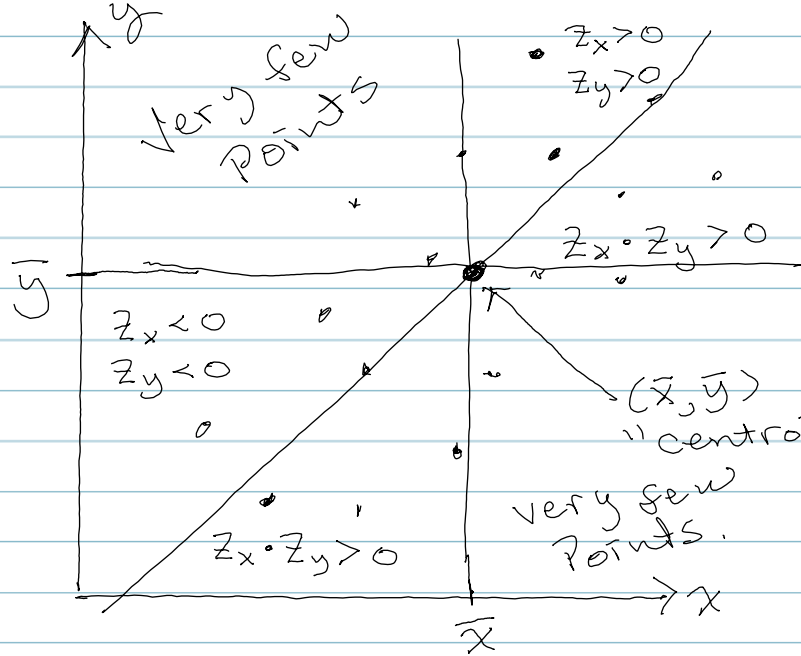
Section 3.1

PART IV

Linear Correlation

New Formula

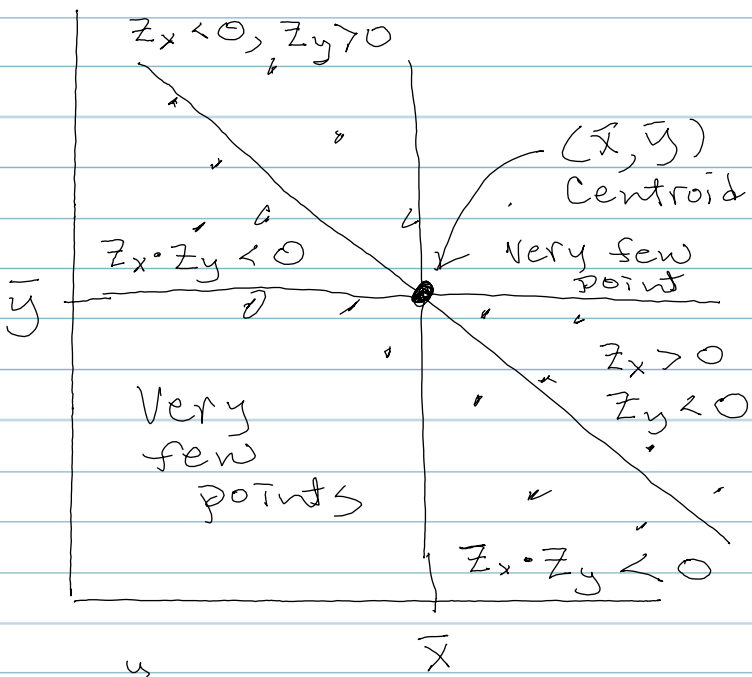
$$r = \frac{\sum Z_x \cdot Z_y}{n-1}$$



Positive Correlation

$$\bar{x} = \frac{\sum x}{n}, \bar{y} = \frac{\sum y}{n}$$

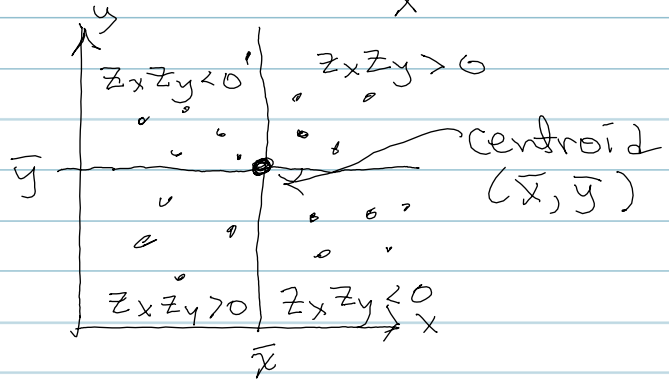
Most points are in upper right or lower left where $Z_x \cdot Z_y > 0$.
Thus,
$$r = \frac{\sum Z_x \cdot Z_y}{n-1} > 0$$



Negative Correlation

Most points are in upper left or lower right where $Z_x \cdot Z_y < 0$.
Thus

$$r = \frac{\sum Z_x \cdot Z_y}{n-1} < 0$$



No Correlation
We tend to have as many pts where $Z_x \cdot Z_y > 0$ as $Z_x \cdot Z_y < 0$, so $r \approx 0$.