Pearson's R, correlation coefficient
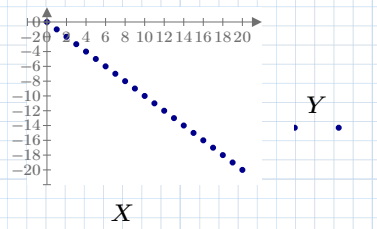
$$R_{Pear}(X,Y) := \frac{1}{rows(X)-1} \cdot \frac{(X-mean(X)) \cdot (Y-mean(Y))}{stdev(X) \cdot stdev(Y)}$$

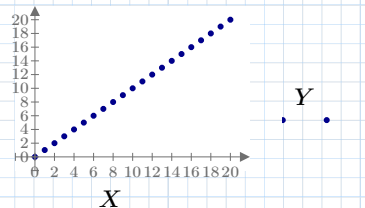**Two equal length vectors!**

$i := 0 .. 20$

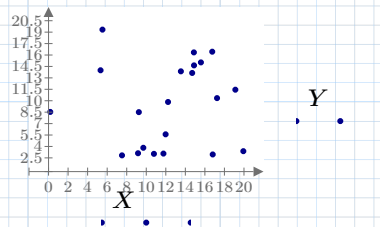$X_i := i \qquad Y_i := -i \qquad R_{Pear}(X,Y) = -1$

Perfect negative correlation

$X_i := i \qquad Y_i := i \qquad R_{Pear}(X,Y) = 1$

Perfect positive correlation

$X_i := rnd(20) \qquad Y_i := rnd(20) \qquad R_{Pear}(X,Y) = 0.063$

Random correlation

$X_i := i \qquad Y_i := i + rnd(20) - 10 \qquad R_{Pear}(X,Y) = 0.71$

Random correlation