Linear Regression

$$y = mx + b$$

m = slope

b = intersection.

Y = dependent

X = independent.

X (Radius)	Y (Price)	Deviation (X)	Deviation (Y)	Product X*Y	Square of Deviation of X
	10				
8	10	-2	-3	6	4
10	13	0	0	0	0
12	16	2	3	6	4
13	?			$\Sigma = 12$	$\Sigma = 8$

m = sum of product of deviations / sum of Product of deviation for X

b = mean of Y − (m * Mean of X)

mean of X = $\frac{8+10+12}{3} = \frac{30}{3} = 10$

mean of Y = $\frac{10+13+16}{3} = \frac{39}{3} = 13$

$m = \frac{\text{Sum of Product of Deviations}}{\text{Sum of square of Deviation of X}}$

$m = \frac{12}{8} = 1.5$

$b = \text{mean of } y - (m * \text{Mean of } x)$

$= 13 - (1.5 * 10)$

$= 13 - 15$

$= -2$

$Y = mX + b$

$= 1.5(13) + (-2)$

$= 1.5(13) - 2$

$= 19.5 - 2$

$\boxed{Y = 17.5}$