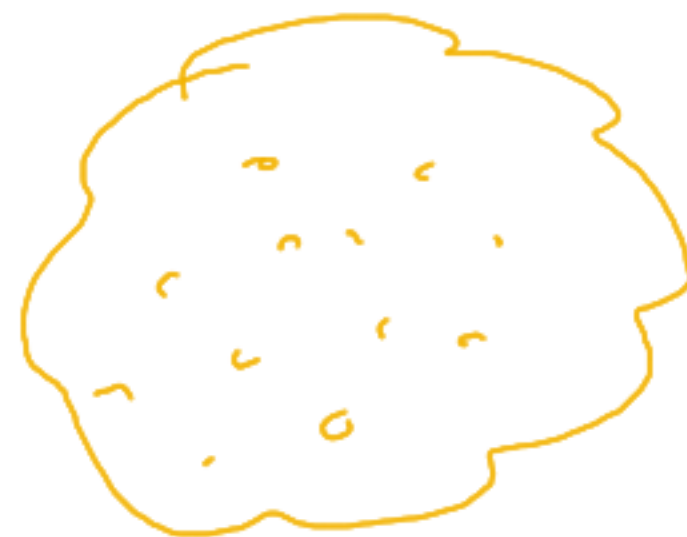


	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
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1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	20	100	100	204	200	204	176	132	100	00	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	43	188	224	250	250	204	198	250	250	250	250	250	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	00	244	240	268	187	96	10	8	1	70	104	258	268	258	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	137	293	293	230	48	0	0	0	0	0	122	253	293	150	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	3	20	27	16	0	0	0	0	0	48	224	228	240	74	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	249	250	240	120	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	16	101	228	268	218	124	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	11	100	230	259	259	259	187	80	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	18	240	250	250	250	250	250	250	210	210	111	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	43	98	98	208	253	253	253	253	187	22	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	110	253	253	253	70	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	180	253	253	100	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	182	268	268	104	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	240	253	253	30	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70	214	253	253	173	11	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	217	258	268	250	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	42	150	252	253	253	238	53	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	42	115	42	80	115	150	240	250	250	250	175	25	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	187	268	268	253	253	250	250	250	117	28	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	103	253	253	253	253	253	232	67	1	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

تَقْدَان



28x28 (784)



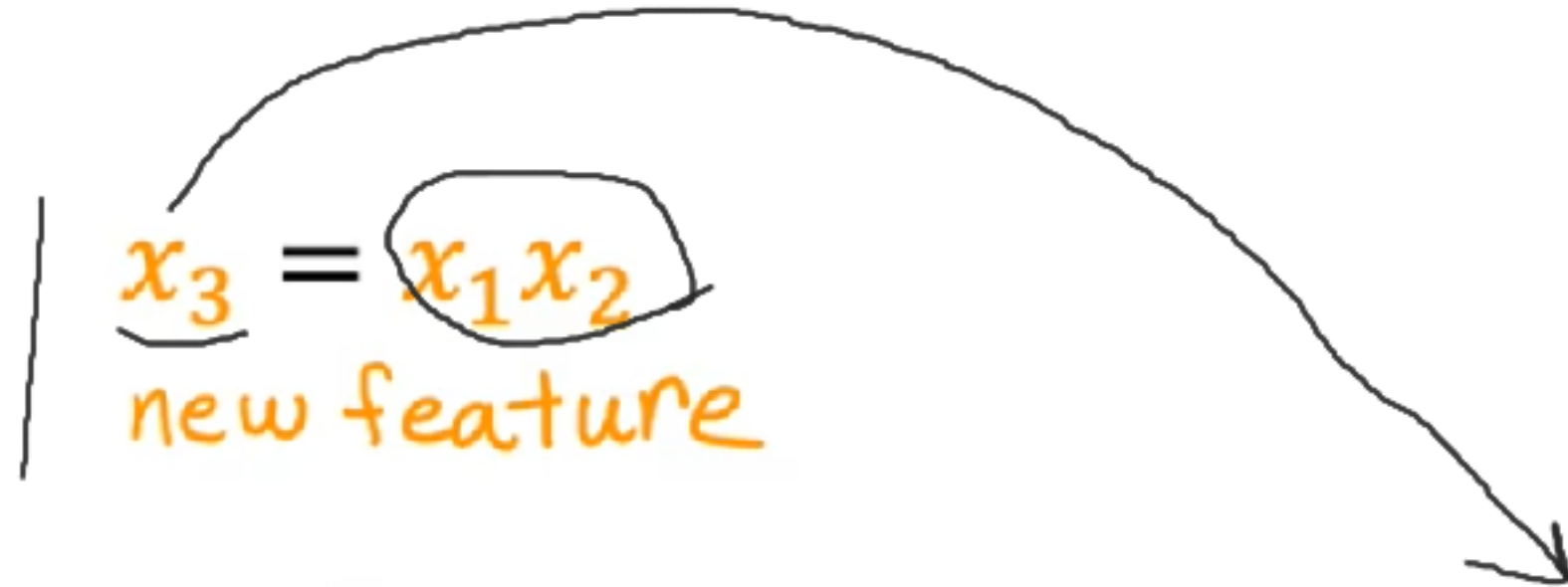
تَرَاكُم
1 → 1 (تَقْدَان)
1 → 1 (تَرَاكُم)

Feature engineering

$$f_{\vec{w},b}(\vec{x}) = w_1 \underbrace{x_1}_{\text{frontage}} + w_2 \underbrace{x_2}_{\text{depth}} + b$$



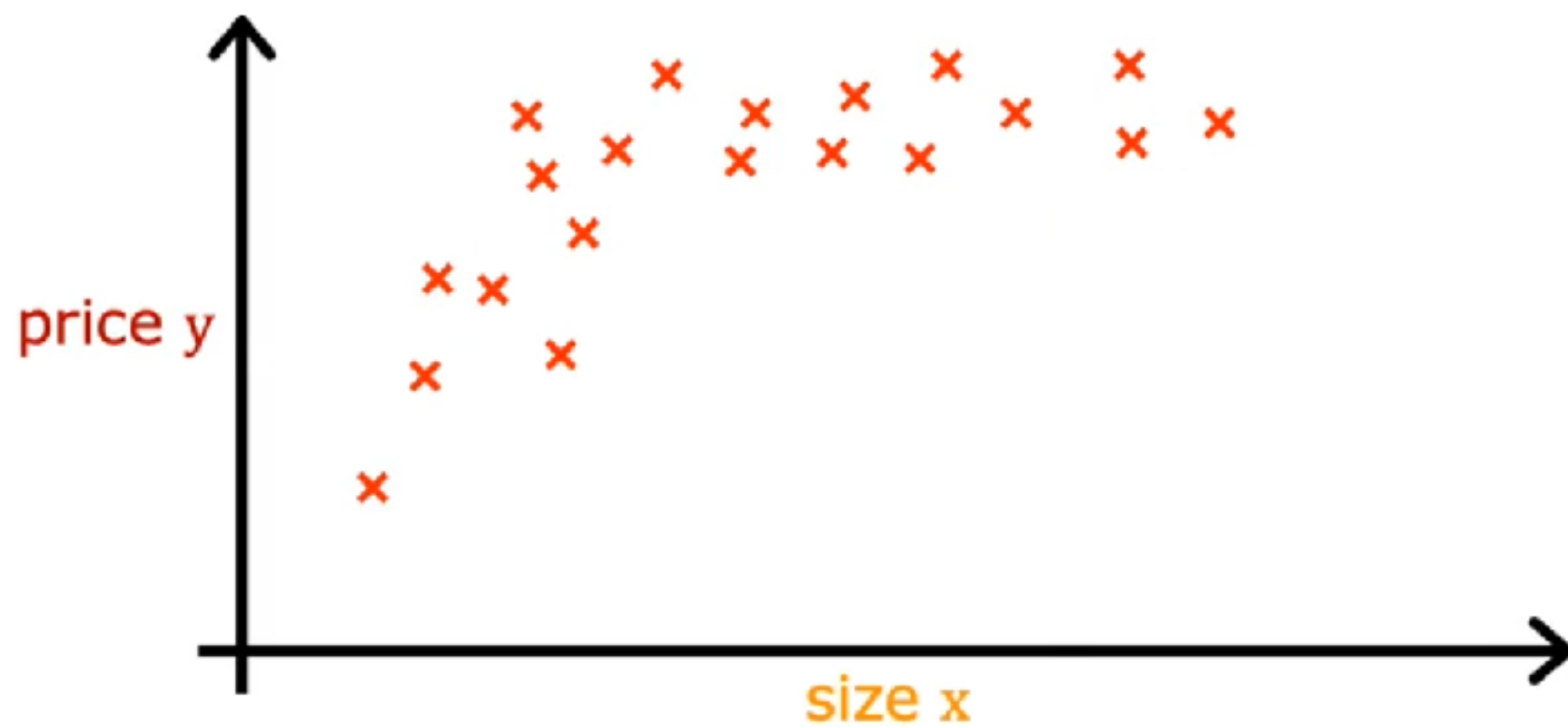
$$area = frontage \times depth$$

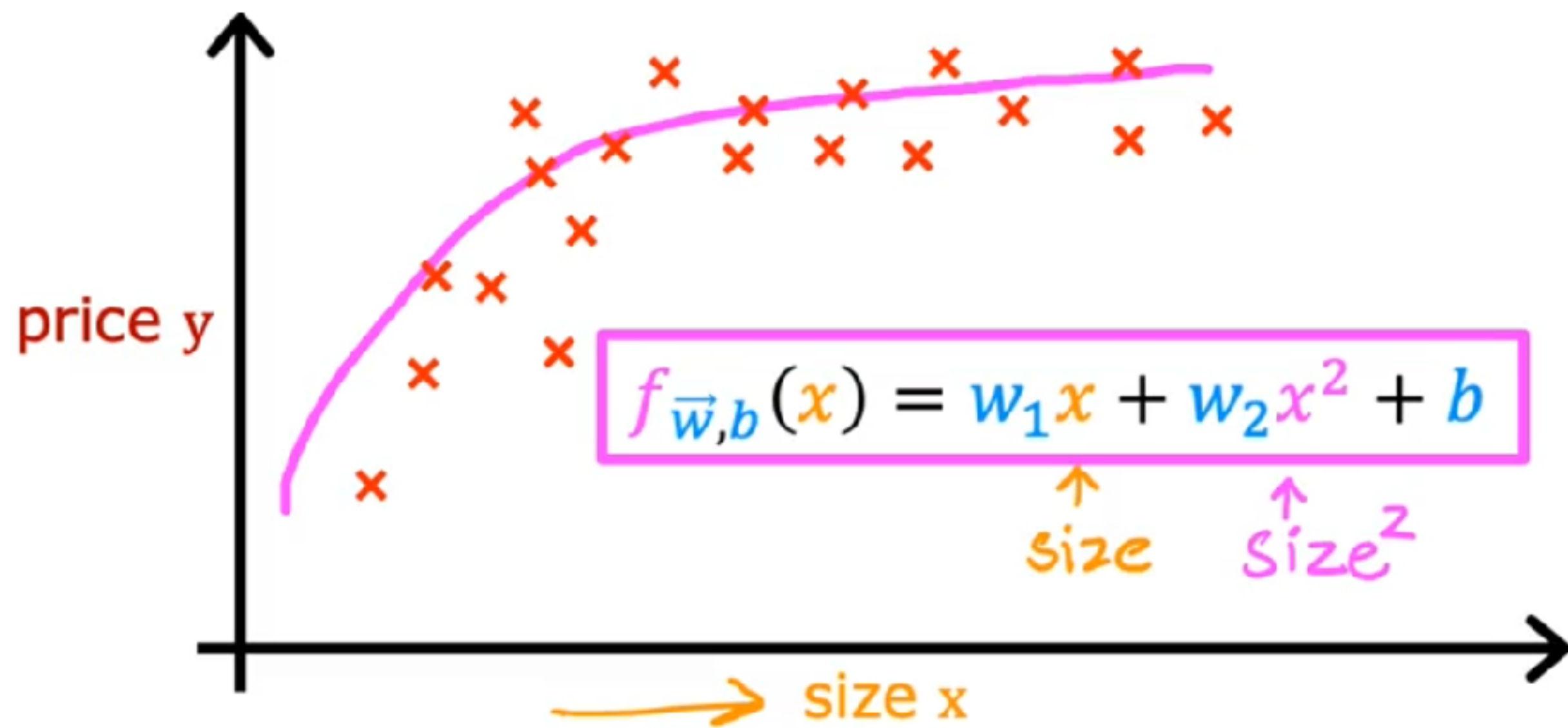

$$\underbrace{x_3}_{\text{new feature}} = x_1 x_2$$

$$f_{\vec{w},b}(\vec{X}) = \underbrace{w_1}_{\text{weight}} \underbrace{x_1}_{\text{feature}} + \underbrace{w_2}_{\text{weight}} \underbrace{x_2}_{\text{feature}} + \underbrace{w_3}_{\text{weight}} \underbrace{x_3}_{\text{feature}} + b$$

Feature engineering:
Using **intuition** to design
new features, by
transforming or combining
original features.

6. Polynomial Regression





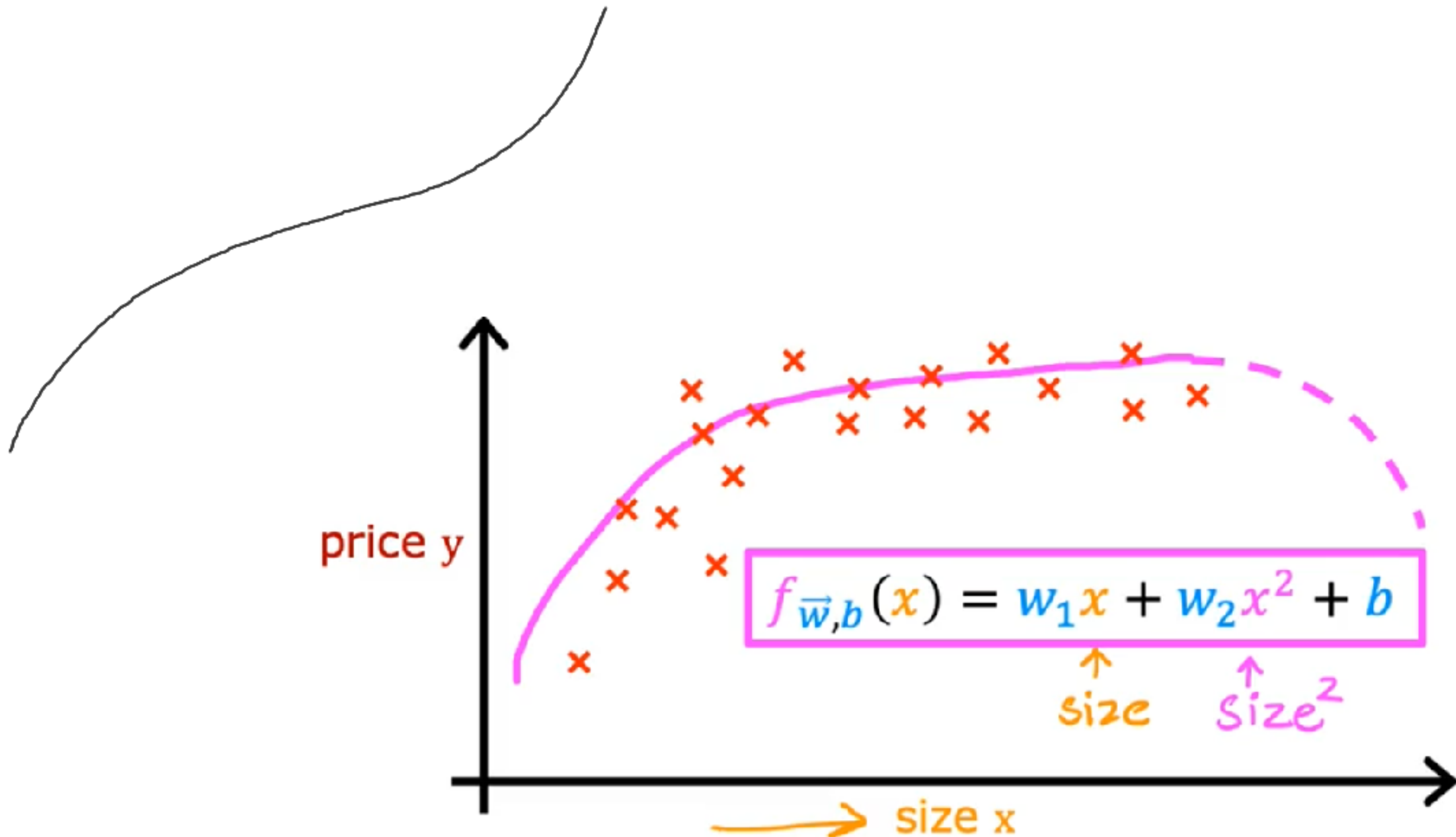
price y

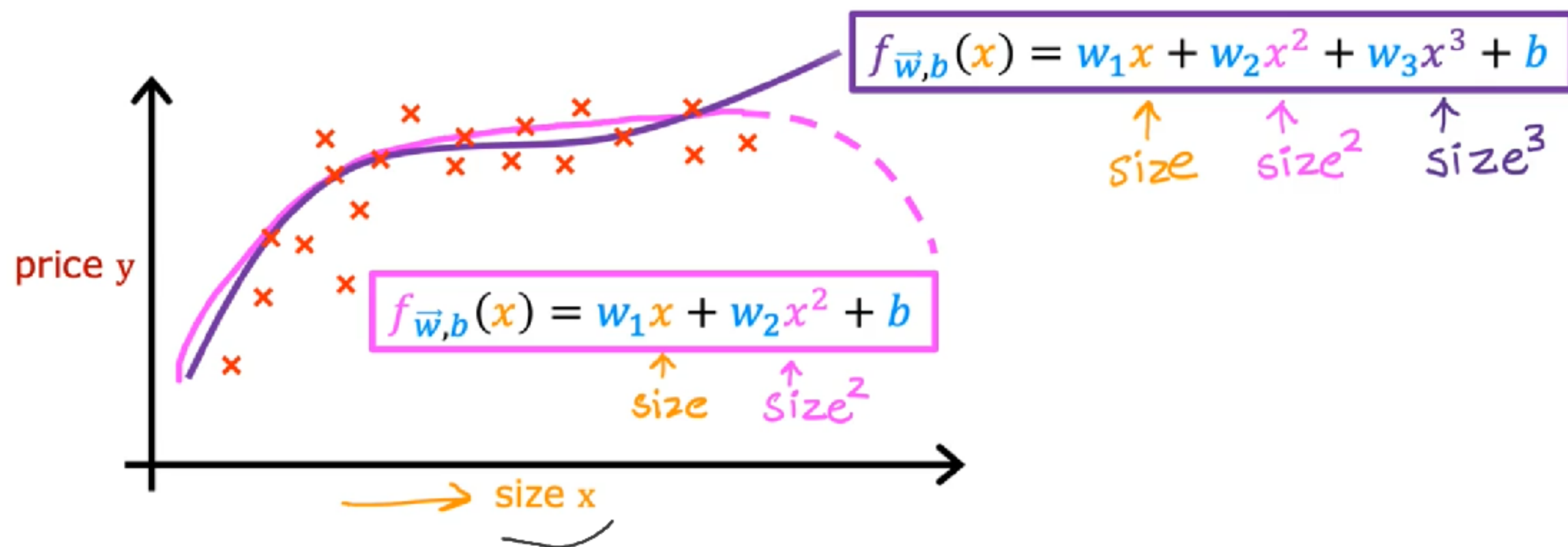
$$f_{\vec{w},b}(x) = w_1x + w_2x^2 + b$$

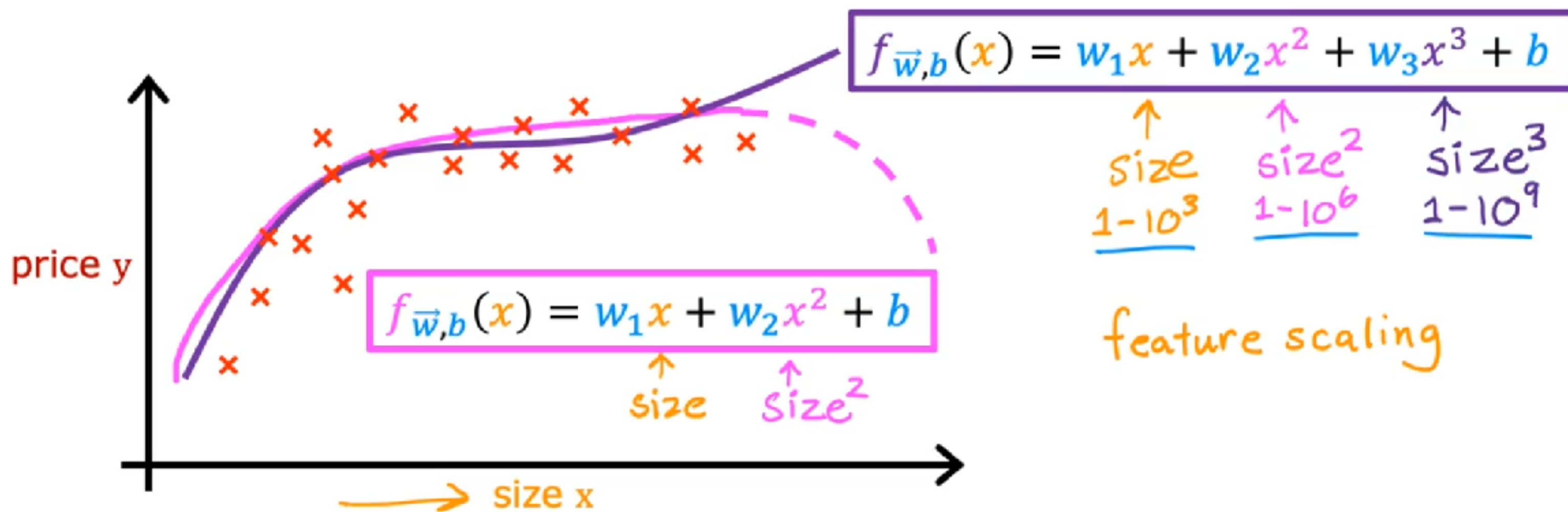
size

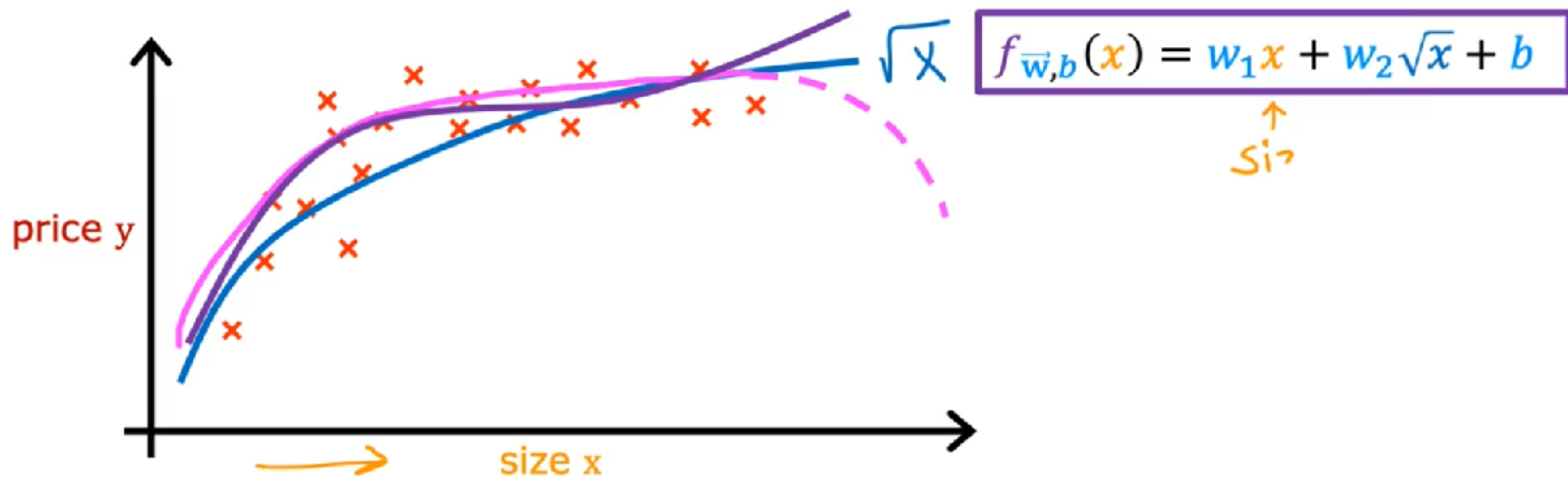
size²

size x









تقریباً دو سوم مسیر طی شد

