When you raise something to the power of (1/4) you are essentially taking the square root of that number two times.

```
In [4]: ad_conversion
Out[4]:
```

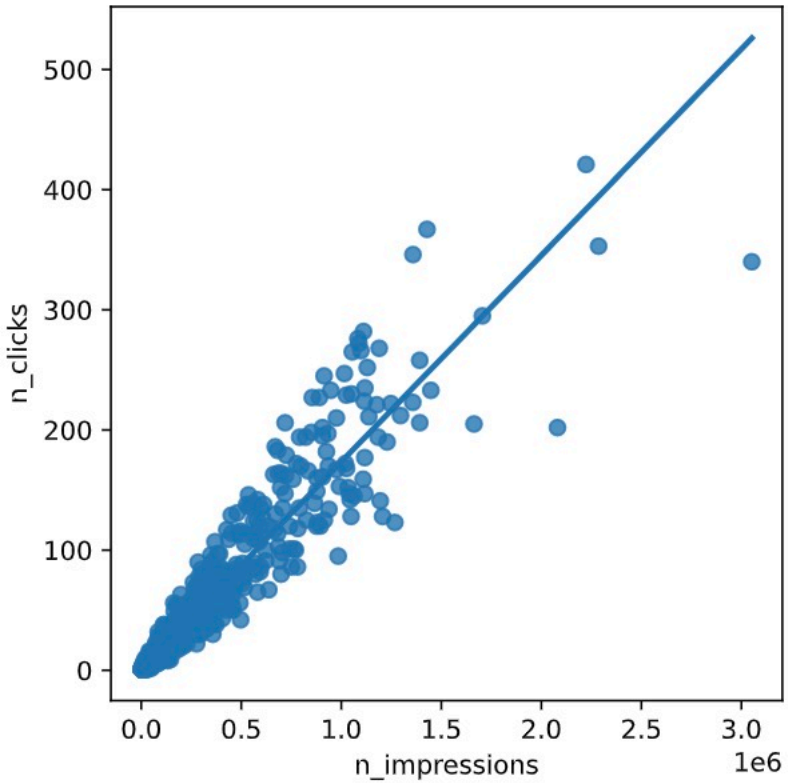
	spent_usd	n_impressions	n_clicks
0	1.43	7350	1
1	1.82	17861	2
2	1.25	4259	1
3	1.29	4133	1
4	4.77	15615	3
..	...	...	...
931	358.19	1129773	252
932	173.88	637549	120
933	40.29	151531	28
934	198.71	790253	135
935	165.61	513161	114

```
# Create qdrt_n_impressions and
qdrt_n_clicks
ad_conversion["qdrt_n_impressions"] =
ad_conversion['n_impressions'] ** 0.25
ad_conversion["qdrt_n_clicks"] =
ad_conversion['n_clicks'] ** 0.25

plt.figure()

# Plot using the transformed variables
sns.regplot(x='qdrt_n_impressions',
y='qdrt_n_clicks', data=ad_conversion,
ci=None)
plt.show()
```

So the plot looks like:

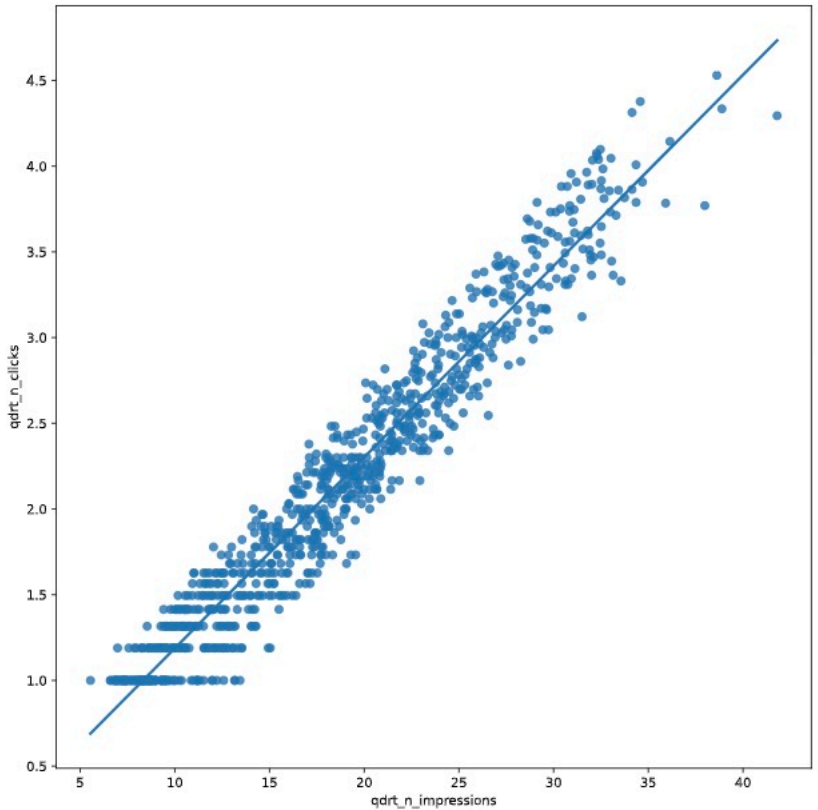


Make the model:

```
ad_conversion["qdrt_n_impressions"] =
ad_conversion["n_impressions"] ** 0.25
ad_conversion["qdrt_n_clicks"] =
ad_conversion["n_clicks"] ** 0.25

# Run a linear regression of your
transformed variables
mdl_click_vs_impression = ols
('qdrt_n_clicks ~ qdrt_n_impressions',
data=ad_conversion).fit()
```

Plots



```
ad_conversion["qdrt_n_impressions"] = ad_conversion["n_impressions"] ** 0.25
ad_conversion["qdrt_n_clicks"] = ad_conversion["n_clicks"] ** 0.25

mdl_click_vs_impression = ols("qdrt_n_clicks ~ qdrt_n_impressions", data=ad_conversion,
ci=None).fit()

explanatory_data = pd.DataFrame({"qdrt_n_impressions": np.arange(0, 3e6+1, 5e5) ** .25,
                                 "n_impressions": np.arange(0, 3e6+1, 5e5)})

# Complete prediction_data
prediction_data = explanatory_data.assign(
    qdrt_n_clicks = mdl_click_vs_impression.predict(explanatory_data),
    n_clicks=mdl_click_vs_impression.predict(explanatory_data) ** 4
)

# Print the result
print(prediction_data)
```

	qdrt_n_impressions	n_impressions	qdrt_n_clicks	n_clicks
0	0.000	0.000e+00	0.072	2.650e-05
1	26.591	5.000e+05	3.038	8.514e+01
2	31.623	1.000e+06	3.599	1.677e+02
3	34.996	1.500e+06	3.975	2.497e+02
4	37.606	2.000e+06	4.266	3.312e+02
5	39.764	2.500e+06	4.507	4.125e+02
6	41.618	3.000e+06	4.714	4.936e+02