

00:00:08.580 --> 00:00:10.524

OK, this video is on absolute

00:00:10.524 --> 00:00:11.820

values in radical expressions

00:00:11.880 --> 00:00:13.640

and what I mean by that is this.

00:00:13.640 --> 00:00:16.110

So let's let's suppose that

00:00:16.110 --> 00:00:19.200

I look at the square root.

00:00:19.200 --> 00:00:21.844

Of negative 2. Squared,

00:00:21.844 --> 00:00:26.647

and let's remember that this square root is

00:00:26.647 --> 00:00:28.516

always asking for the positive square root.

00:00:28.520 --> 00:00:31.257

So what's going to happen here is.

00:00:31.260 --> 00:00:34.470

We're really going to take  $\sqrt{4}$ .

00:00:34.470 --> 00:00:36.560

Because I'm taking square root

00:00:36.560 --> 00:00:39.176

of right negative 2 squared is 4.

00:00:39.180 --> 00:00:41.706

And sqrt 4 then is 2.

00:00:41.710 --> 00:00:45.094

So what happened is we sort of forgot.

00:00:45.100 --> 00:00:47.577

That there was a minus sign in there and

00:00:47.577 --> 00:00:49.516

we're getting instead of negative 2 back.

00:00:49.520 --> 00:00:51.460

We're getting the absolute

00:00:51.460 --> 00:00:53.885

value of negative two so.

00:00:53.890 --> 00:00:57.138

In general, if I have this square root.

00:00:57.140 --> 00:01:00.450

Of let's say  $X, ^2$ .

00:01:00.450 --> 00:01:02.865

I would like to get  $X$  back.

00:01:02.870 --> 00:01:04.895

But if  $X$  is negative like it is here,

00:01:04.900 --> 00:01:05.930

I don't get that back.

00:01:05.930 --> 00:01:08.726

Instead what I get is absolute value of  $X$ ,

00:01:08.726 --> 00:01:11.507

so this is a little bit of a tricky point,

00:01:11.510 --> 00:01:12.750

and it doesn't always happen.

00:01:12.750 --> 00:01:14.899

So this is what makes it tricky.

00:01:14.900 --> 00:01:16.070

Even so, what about this?

00:01:16.070 --> 00:01:17.348

What I have the cube root?

00:01:21.730 --> 00:01:27.058

Negative 2. Cubed then what I'm getting is.

00:01:29.310 --> 00:01:30.078

The cube root.

00:01:32.380 --> 00:01:34.934

Of negative 8. Well,

00:01:34.934 --> 00:01:35.978

the cube root of negative 8.

00:01:35.980 --> 00:01:37.354

That's going to be a number

00:01:37.354 --> 00:01:38.535

where this number cubed is

00:01:38.535 --> 00:01:39.807

negative 8 and that number is.

00:01:42.650 --> 00:01:45.680

Negative two, so here we've got

00:01:45.680 --> 00:01:47.983

this rule with. With X squared,

00:01:47.983 --> 00:01:49.810

but the corresponding rule with  $X^3$ .

00:01:54.990 --> 00:01:56.205

Is actually just what you

00:01:56.205 --> 00:01:57.267

would hope for, right?

00:01:57.267 --> 00:02:00.210

It's just that cube root cancels out  $X^3$ ,

00:02:00.210 --> 00:02:02.910

whereas here it doesn't quite.

00:02:02.910 --> 00:02:04.400

And then what about let's,

00:02:04.400 --> 00:02:05.810

let's, let's think about this.

00:02:05.810 --> 00:02:09.028

What if we have? The 4th root.

00:02:16.500 --> 00:02:21.060

Of.  $X$  to the 8th.

00:02:21.060 --> 00:02:23.778

Well, what will I get out of that so?

00:02:23.780 --> 00:02:25.718

I want something where this thing

00:02:25.718 --> 00:02:28.119

to the 4th power is X to the 8th,

00:02:28.120 --> 00:02:30.950

so that's going to be.

00:02:30.950 --> 00:02:34.898

X squared because.

00:02:34.900 --> 00:02:38.590

Because  $X^2$ . Raise the 4th.

00:02:38.590 --> 00:02:40.340

I just multiply those right?

00:02:40.340 --> 00:02:43.970

And that's X to the  $2 * 4$ .

00:02:43.970 --> 00:02:46.430

X to the 8.

00:02:46.430 --> 00:02:48.733

And so do I need absolute values

00:02:48.733 --> 00:02:50.698

on that you know or not.

00:02:50.700 --> 00:02:51.440

And the answer is no,

00:02:51.440 --> 00:02:53.005

I don't write because X

00:02:53.005 --> 00:02:54.686

squared can never be negative.

00:02:54.686 --> 00:02:56.816

So there's this really tricky

00:02:56.816 --> 00:02:59.741

kind of like a mess that comes

00:02:59.741 --> 00:03:02.436

up right in certain picky cases.

00:03:02.436 --> 00:03:04.856

I need these absolute values,

00:03:04.860 --> 00:03:07.590

and in in other cases.

00:03:07.590 --> 00:03:08.680

Cube roots and 4th roots

00:03:08.680 --> 00:03:09.970

and 5th roots and so on.

00:03:09.970 --> 00:03:12.637

They do exactly what I would hope.

00:03:12.640 --> 00:03:16.105

So the thing to watch out for it is

00:03:16.105 --> 00:03:19.537

if you're taking an even root so

00:03:19.540 --> 00:03:22.156

and you're getting an odd exponent,

00:03:22.160 --> 00:03:22.506

right?

00:03:22.506 --> 00:03:24.928

That's really when will have trouble,

00:03:24.930 --> 00:03:26.910

so even roots.

00:03:30.980 --> 00:03:32.030

Odd exponents.

00:03:34.310 --> 00:03:35.458

You need absolute value.