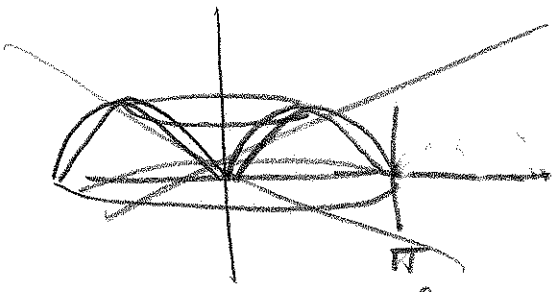
201 ~~5.1 #s 35, 37~~ This is 5.3 #35!

#s 35, 36 use CAS* to ~~estimate~~ find exact x-coords of intersections & find exact volume of the solid obtained by rotating the region bold by the given curves about the specified line of

(35) $y = \sin^2 x$, $y = \sin^4 x$, $0 \le x \le \pi$ about $x = \frac{\pi}{2}$



$\sin^4 x$ is underneath.

$\sin^4 x = \sin^2 x$ @ $x = \frac{\pi}{2}, 0, \pi$

outer^2 − inner^2

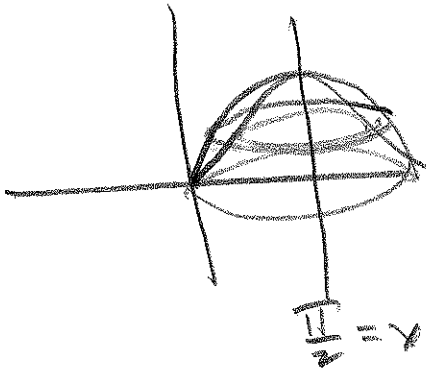
Washer Method, right − left (upper − lower) on the radius. Right: $y = \sin^2 x$ } outer washer
Left: $y = \sin^4 x$ }

Then again

~~Right : $\sin^4 x$ } Inner Washer.~~
~~Left : $\sin^2 x$ }~~

Wait: rotating about $x = \frac{\pi}{2}$, we have some symmetry

Better pic.



outer: $y = \sin^2 x$

$\sqrt{y} = \sin x$

$x = \arcsin(\sqrt{y})$

Inner: $x = \arcsin(\sqrt[4]{y})$

$y : [0, 1]$

201 §5.1 #35, 37

35 cntd

$$\pi \int_0^1 \left(\left(\arcsin\left(y^{\frac{1}{2}}\right) \right)^2 - \left(\arcsin\left(y^{\frac{1}{4}}\right) \right)^2 \right) dy = \boxed{-\frac{1}{32}\pi^3}$$

is the setup. I think. See attached Maple transcript.

oops! Worked the wrong one!