Math 125A/125B 3rd week worksheet Jan. 22, 2015

Let R be the region lying between $y = x^2 + 1$ and $y = 2x^2$. Find

(1) the volume of the solid obtained by rotating R around the x-axis, using the washer method;

(2) the volume of the solid obtained by rotating R around the y-axis, using the washer method;

(3) the volume of the solid obtained by rotating R around the line $y = 2$, using the washer method;

(4) same as (1) but using the shell method;

(5) same as (2) but using the shell method;

(6) same as (3) but using the shell method;

(7) the volume of the solid whose cross section by a plane perpendicular to the x-axis is a circle whose diameter is the intersection of that plane with R (that is, the line joining $(x, 2x^2)$ to $(x, x^2 + 1)$).