Review for Test on U sub, Area and Volume

Use "U Sub" to integrate

1. $\int t\sin(t^2)dt$

2. $\int \frac{x^2}{\sqrt{1-x}}dx$

3. $\int \frac{x}{\sqrt{x^2+1}}dx$

4. $\int \sin^3 x\cos x dx$

5. $\int_0^4 \frac{x}{\sqrt{1+2x}}dx$

6. $\int_1^4 \frac{1}{x^2}\sqrt{1+\frac{1}{x}}dx$

7. $\int_0^{\frac{\Pi}{4}} (1+\tan x)^3 \sec^2 x dx$

8. $\int \sin \Pi x dx$

Find the area of the region bounded by the given curves

9. $y=x^3, y=x^2-4x+4$, x=0, x=2

10. $y=1-x^2,\ y=1-\sqrt{x}$

11. $x-2y+7=0,\ y^2-6y-x=0$

The region bound by the given curves is rotated about the specified axis. Find the volume of the resulting solid.

12. $y=x^2, x=y^2$ about the y=2

13. $x=1-y^4$, x=0, about x=2

14. $y=x^3,\ y=x^2$ about the x axis

15. $y=\sqrt{x-1}$, y=0,x=3 about x axis

16. Evaluate the following absolute value integrals.

$$\int_0^8 |x^2 - 6x + 3|\, dx$$

$$\int_{-2}^{4} |-x^2 + 2x + 5| dx$$

17. Find the following volume by cross-sections.

Find the volume of the solid whose base is the region inside the circle $x^2 + y^2 = 9$ if cross sections taken perpendicular to the $y$-axis are squares.

Find the volume of the solid whose base is the region enclosed by $y=2x$ and $y=x^3$ when cross-sections perpendicular to the $y$-axis are sides of squares.