General Review AP Calc

Draw the pictures, and integrate. You should be able to do all of these without a calculator! (YIKES!) ☺

1. Find the area between $f(x) = 2 - x^2$ and $g(x) = x$
2. Find the area between $f(x) = x^3 - 2x^2 + x - 1$ and $g(x) = -x^2 + 3x - 1$
3. Find the area between $x = 3 - y^2$ and $y = x - 1$
4. Find the volume of the solid formed by rotating the region $y = \sqrt{x}$ and $y = x^2$ @x-axis
5. Revolve the region bounded by $y = x^2 + 1,\ y = 0,\ x = 0, and\ x = 1$ about the y-axis, then find the volume.
6. Find the volume of the solid whose base is the area bounded by the lines $f(x) = 1 - \frac{x}{2}$, $g(x) = \frac{x}{2} - 1\ and\ x = 0$ whose cross sections are $\perp$ to the x-axis are equilateral $\Delta's$.
7. Find the volume of the solid formed by revolving the region bounded by the graphs of $y = x^3 + x + 1,\ y = 1\ and\ x = 1$ about the line x=1.

Integrate. Remember to use u-sub, vu-du, partial fractions, or any other tricky-trick we know. Show all work, DO NOT USE YOUR CALCULATOR!

8. $\int \frac{x+3}{\sqrt{4-x^2}}dx$

9. $\int_0^{\pi/4} (sin2x)e^{-cos2x}dx$

10. $\int \frac{1+\cos(e^{-2x})}{e^{2x}}dx$

11. $\int \frac{x^2}{\sqrt{16-x^6}}dx$

12. $\int \frac{1}{1+e^x}dx$

13. $\int (cotx)[\ln(sinx)]dx$

14. $\int tan^2 2xdx$

15. $\int x^2 lnx\ dx$

16. $\int arcsinx\ dx$

17. $\int sin^3 xcos^4 x\ dx$

18. $\int_0^{\pi/2} cos^4 x\ dx$

19. $\int \frac{1}{x^2-5x+6}dx$

20. $\int \frac{2x^3+x^2-7x+7}{x^2+x-2}dx$