1) Find the volume of the rotated region bounded by the curves

$$x = y^2, x = 1 - y^2; \text{about } x = -1$$

2) Find the volume of the rotated region bounded by the curves

$$y = \frac{1}{1 + x^2}, y = \frac{x}{2}; \text{around the } y - \text{axis}$$

3) Find the volume of the rotated region bounded by the curves

$$y = 1 - x^2, y = x^6 - x + 1; \text{ around the } y - \text{axis}$$

4) $\int x^4 \ln x \, dx$

5) $\int_0^{\frac{\pi}{3}} e^{3x} \cos x \, dx$

6) $\int \tan^4 x \sec^2 x \, dx$

7) $\int \sin^5 x \cos^2 x \, dx$

8) $\int \dfrac{1}{x^2\sqrt{x^2-16}}\,dx$

9) $\int_{1}^{2} \frac{3x^2+6x+2}{x^2+3x+2}\,dx$

10)    $\int \dfrac{10}{(x-1)(x^2+9)} \, dx$