

Full Name:

ID:

**Question 1** Find the volume of the solid obtained from rotating the region enclosed by  $x = \sqrt{1 - y^2}$  and by  $x = y^2 - 1$  about the line  $y = -2$ .

**Question 2** Evaluate the following integrals

a)  $\int \cos(\ln(2x + 1)) dx$     b)  $\int \sin^2 x \cos(3x) dx$

c)  $\int \csc^{12}(2x) \cot^3(2x) dx$     d)  $\int \cos^7(4x) \sin^3(4x) dx$     e)  $\int 2^x x^3 dx$