Pop Quiz #1

(1) Evaluate the following integral in terms of the area and graph

$$\int_{-3}^{0} \left(1 + \sqrt{9 - x^2}\right) dx$$

$f(x) = 1 + \sqrt{9 - x^2}$ between $x = -3$ and $x = 0$

This is equal to one quarter the area of the circle with radius 3, plus the area of the rectangle, so

$$\int_{-3}^{0} \left(1 + \sqrt{9 - x^2}\right) dx = \frac{1}{4}\pi 3^2 + 1 \cdot 3$$

$$= \boxed{3 + \frac{9}{4}\pi}$$