Practice Problems for 9.1, 9.2 and 7.2

1. True or false and explain $\frac{1}{\cos x} \int \cos x \, dx = \tan x + C$

2. Using $dx = .2$, $n = 2$, $y(1) = 2$ approximate the solution of the equation $\frac{y'}{1-y} = x$

3. In order to solve a 1st order **linear** DE, we set $v = e^{\int P dx}$. Suppose H_1 and H_2 are two antiderivative of $P(x)$, show that $v_1 = e^{H_1}$ and $v_2 = e^{H_2}$ would give the same result for the solution of the DE.

4. Solving explicitly the following differential equations
a $\tan(x)y' + y = \frac{\sin x}{1-\sin^2 x}$, $-\pi/2 < x < \pi/2$

b. $\frac{dy}{dx} = e^{x-y} + e^x + e^{-y} + 1$, $y(0) = 2$