Problem #1:
Find the directional derivative of \( f(x, y) := 3x^2 - 2y^2 \) at \( \left( \frac{-3}{4}, 0 \right) \) in the direction from \( P \left( \frac{-3}{4}, 0 \right) \) to \( Q(0,1) \).

Please see example 4 - page 869

Problem #2:
The temperature in degree Celcius on the surface of a metal is \( T(x, y) := 20 - 4x^2 - y^2 \) where \( x \) and \( y \) are measured in centimeters.
a. In what direction from \( (2, -3) \) does the temperature increase most rapidly?
b. What is this rate of increase?

Please see example 5 - page 870
Problem#3:
Find an equation of the tangent plane AND the parametric equations of the normal lines to the surface given by: 

\[ z := e^x (siny + 1) \]

at the point \((0, \frac{-\pi}{2}, 2)\).

Please Pb #7 - page 883

Solutions is on line