11.3/48 \( V = (x+y)^{-\frac{1}{2}} \) \\
\( V_x = \frac{1}{2} (x+y)^{-\frac{3}{2}} \), \( V_{xx} = \frac{1}{4} (x+y)^{-\frac{5}{2}} \).
\( V_y = \frac{1}{2} (x+y)^{-\frac{3}{2}} \), \( V_{yy} = \frac{1}{4} (x+y)^{-\frac{5}{2}} \).
\( V_{xy} = V_{yx} = \frac{1}{4} (x+y)^{-\frac{5}{2}} \).
\( \frac{1}{4} (x+y)^{-\frac{5}{2}} \).

11.4/5 \( z = y \cos(x-y) \), \( (2,3,2) \).
\( z_x = -y \sin(x-y) \)
\( z_y = \cos(x-y) + y \sin(x-y) \).
\( z_x(2,3) = 0 \)
\( z_y(2,3) = 1 \).

So the plane is \( z = 2 + 0(x-2) + 1(y-2) \Rightarrow [z = y] \).

11.9 (12) \( f(x,y) = \frac{x}{y} \) is a rational function of \( x+y \), and is continuous on its domain. \( f_x = \frac{1}{y} \) and \( f_y = -\frac{x}{y^2} \) are continuous on their domains, which (for both) is \( y \neq 0 \). Therefore \( f_x \) and \( f_y \) both exist near \( (6,3) \) and are continuous at \( (6,3) \), so by Thm 18, p. 620, \( f \) is differentiable at \( (6,3) \). \( f_x(6,3) = \frac{1}{3} \), \( f_y(6,3) = -\frac{2}{3} \), \( f(6,3) = 2 \).

So \( [L(x,y) = 2 + \frac{1}{3}(x-6) - \frac{2}{3}(y-3)] \).