Q.2. (i) $g = h * f$ with given g and h

Taking FFT of above equation

$G = H \cdot F$ where $G = F(g)$ $H = F(h)$ $F = F(f)$.

$F = \dfrac{G}{H}$ $\Rightarrow$ $f = F^{-1}\left(\dfrac{G}{H}\right)$. Since h is gradient

operation convolutional kernel, H is High pass filter.
→ For low frequency $H \sim 0$ hence $\dfrac{G}{H} \to \infty$. Which is
a problem in calculating inverse fourier.

(ii) let g_x, g_y be the 2D gradient image with respect
to x and y direct $\cancel{ga}$ -ion.

$g_x = h_x * f$ $g_y = h_y * f$
$\Rightarrow G_x = H_x \cdot F$ $G_y = H_y \cdot F$
$\Rightarrow f = F^{-1}\left(\dfrac{G_x}{H_x}\right)$ or $f = F^{-1}\left(\dfrac{G_y}{H_y}\right)$

Here is also the same problem as above