EE7403 2022-2023 S2 (a) for wx- 13 wy = b (b is a constant) f(x,y) = h(b) is a constant. φ = tan-1 1 = 1 (b) Suppose Z=WN-J3WY $\frac{\partial f(x,y)}{\partial x} = \frac{\partial f(x,y)}{\partial x} = h'(wx - 13wy) \cdot w$ $\frac{\partial f(x,y)}{\partial y} = \frac{\partial f(x,y)}{\partial z} = h'(wx - J_3y) \cdot (-J_3w)$ the direction of gradient: $avctan^{-1}(\frac{\partial f(x,y)}{\partial y}) = avctan^{-1}(-J_3) = -\frac{\pi}{3}$ the orientation of is perpondicular to the direction of gradient めニーシャラニマ (c) f(x,y)=h(wx-13 wy) = sm(wx-13 wy) VF(m,n)= [Sm(wint1) A -J3wn A) - Sm(win-1) A - J3wn A) Sin Lum A - Jsw (n+1) A) - Sin (wm D - Jsw (n-1) A) = [2 (03 \(\omega \) \(\omega = [2003 (Wm D - J3 WN D) . Sin WD 2003 (WM D - J3 WN D) - Sin (-J3 WD)] the gradient's orientation (= corcton-1 2003(wms 15. wns) sin (-15wis) $\begin{array}{ll}
& = -\alpha r \cot m^{-1} \left(\frac{\sin \sqrt{3} w \Delta}{\sin \sqrt{3} w \Delta} \right) \\
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\$ = 4+ 2 = 0.55 rad

(d). according to (a) and (b), we can see the orientation of the image is $\frac{\pi}{b}$ rad, which is equal to 0.52 rad. in part (c), $\Delta = \frac{\pi}{8w}$ whose D is smaller is much more closer to the real angle. Besides, according to (c), the G=tan-1 (Sin WA). for g(s) = sin(J3 WA) 10 m2 (4x+6 (10x+6 lù g(A) = lù (3W COS(NA) = N3 We can know that, when $\Delta \to 0$, Δ is smaller, the $g(\Delta) \to \sqrt{3}$ 4 -> - orctom + No which is closer to (b) The lineation of marlint: Oration () train) = Marlint (- 17) = - 3 the enjectation of it personalization to the direction of reading () TIX T) = 1 (10 1 - 13 10 1) = SIN (10 V - TENT) CANUALIST SER (MUMTING - (ZINGEN S) - SIM [MUM-1)X- JE NIA) [Sin with - 13 m (MH) 2) - Sin (wim 2 - 13 in (m-1) 12) [(+m) (i+m) v) mi conviet - ((1-m) v) + conviet - c(1+m) v) to (1 C. Herrichmongh. Will - School as Cloud late In Ep - Vinor 20 Cl [LICE WAY - BUNK) SALUAL (Za Kuning - (zin El - Linux) 50) L. Children of the control of the control of the control of (Kamar) - Canadamordona COMMIN It with as Lark C = (Infinite) Francis - = 9 5