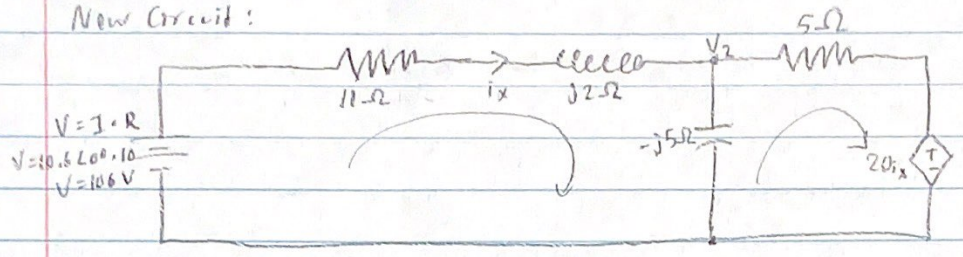
Ethan Wong
11/13/21
305319001

HW 4

Use Norton to Thevenin Conversion

New Circuit:



Use KVL in left loop

$106 = (11 + j2)i_x + (-j5)(i_x - 20i_x)$

$106 = 11i_x + j2i_x - j5i_x + j100i_x$

$106 = 11i_x + j97i_x$

$106 = (11 + j97)i_x$

$i_x = 0.12 - j1.08$ A

Find V_2

$V_2 = V_{-j5\Omega} = IR$

$V_2 = (i_x - 20i_x) \cdot (-j5)$

$V_2 = -19(0.12 - j1.08) \cdot (-j5)$

$V_2 = (-2.28 + j20.52) \cdot (-j5)$

$V_2 = 102.495 + j11.623$ V

$V_2 = 102.660 \angle 6.5°$ V