ECE 3355 – ELECTRONICS

HOMEWORK #5

Sedra and Smith 7th Ed., Chapter 2: Problems 2.8, 2.32, D2.48, 2.69 (vertical line in the definition of ** is intended to indicate division), 2.70, Problems E5.1, E5.2, E5.3, E5.4

E5.1 Find the gain of the following circuits, assuming ideal op amps.



E5.2 The op amp in the circuit below is ideal. The switch is closed until *t* = 0, at which time it opens and stays open. Find *vO(t)* for the range

-10[s] < t < 10[s]. Assume that *vIN(t)* = 2 sin(300[rad/s]t)[V].



E5.3 a) Find the transfer function *T()* for the op amp circuit below, assuming an ideal op amp.

b) Find the poles and zeroes for this transfer function.



E5.4 Find the error in the problem statements for the two parts of Problem 2.78 in the 7th Edition of Sedra and Smith. Explain why this is an error, and how you would correct this error.

Numerical Solutions:

2.8 a) -5, 20[k]; b) -5, 20[k]; c) -5, 20[k]; d) -5, 20[k]

2.32 a) I1 = I2 = 0.1 [mA]; I3 = 10 [mA]; Vx = -1 [V]

b) max RL = 1.19 [k]

c) -11.1 [V]  vo  -2.01 [V]

2.48 Solution omitted

2.69 Solution omitted

2.70 Solution omitted

Extra Problems:

5.1 a) vo/vin = 2; b) vo/vin = -3

* 1. vO = (1.11[V] cos(300 t) – 16.11[V] – 2500[V/s]t)

5.3 a) ; b) Solution omitted.

5.4 Solution omitted.