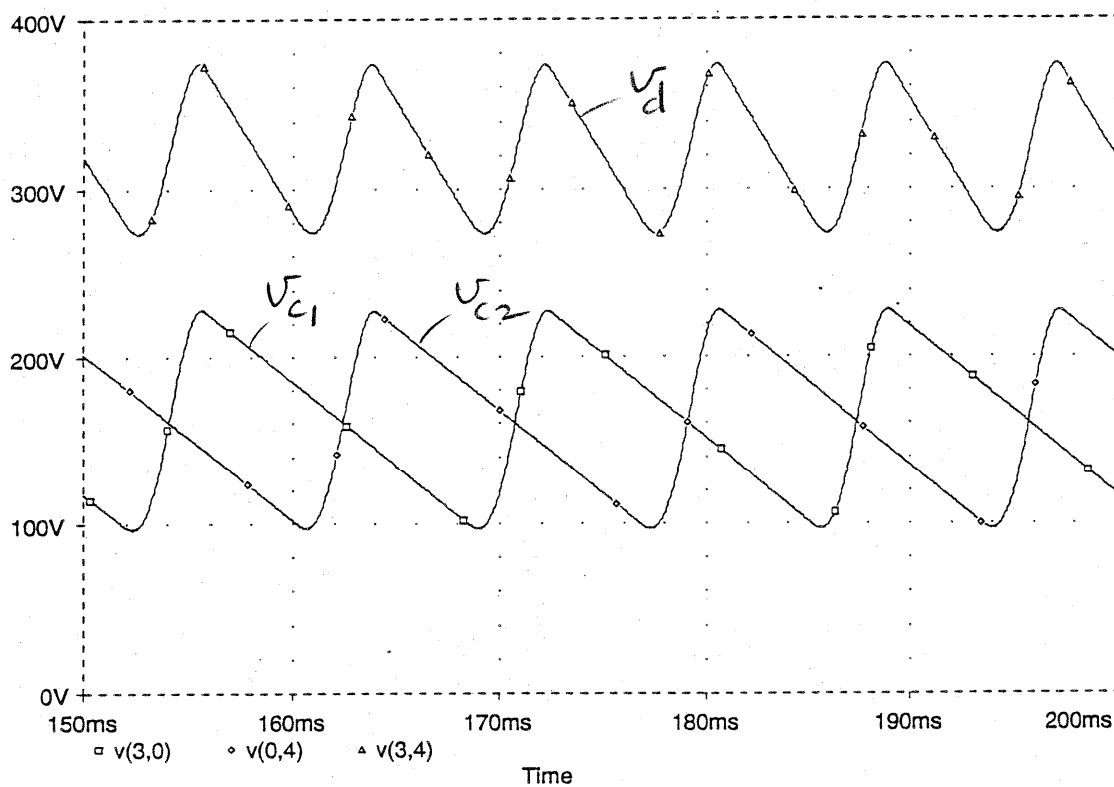


Problem 5-19

(a)

```

Prob5_19.cir
* Single-Phase, Voltage-Doubler Rectifier
* Power Electronics: Simulation, Analysis & Education.....by N. Mohan.
.LIB PWR_ELEC.LIB
.PARAM FREQ = 60.0Hz
LS      1  2  1mH
*
ILOAD   3  4  10A
CD1     3  0  1000uF IC=145V
CD2     0  4  1000uF IC=180V
*
XD1     2  3  DIODE_WITH_SNUB
XD2     4  2  DIODE_WITH_SNUB
*
VS      1  0  SIN(0 170V {FREQ} 0 0 0)
*
.TRAN   50us  200ms  0s  50us  UIC
.PROBE
.END
    
```



(b)

$$\Delta V_{d \text{ p-p}} / V_d = 99.6 \text{ V} / 321.7 \text{ V} \approx 31\%$$

(c)

Single-phase rectifier

$$\Delta V_{d \text{ p-p}} / V_d = 117.61 / 329.2 \text{ V} = 35.7\%$$