

Homework 3 — Solution

Spice deck #1:

```
.title NMOS IDS-VGS

.option nomod post
.include models.inc

m1 d g 0 0 nmos w=10u l=0.13u
vds d 0 dc=0
vgs g 0 dc=1.2

.probe dc id=i1(m1)
.dc vds start=0 stop=1.2 step=0.01 vgs start=0.6 stop=1
step=0.2

.end
```

Spice deck #2:

```
.title NMOS Small Signal Curves

.option nomod post
.include models.inc

m1 d g 0 0 nmos w=10u l=0.13u
vgs g 0 dc=1.2
vds d 0 dc=1

.probe dc id=i1(m1) gm=lx7(m1) gds=lx8(m1)
.dc vgs start=0 stop=1.2 stop=0.01

.end
```

Spice deck #3:

```
.title PMOS IDS-VGS

.option nomod post
.include models.inc

m1 d g 0 0 pmos w=10u l=0.13u
vds 0 d dc=0
vgs 0 g dc=1.2

.probe dc id=i1(m1)
.dc vds start=0 stop=1.2 step=0.01 vgs start=0.6 stop=1
step=0.2

.end
```

Spice deck #4:

```
.title PMOS Small Signal Curves

.option nomod post
.include models.inc

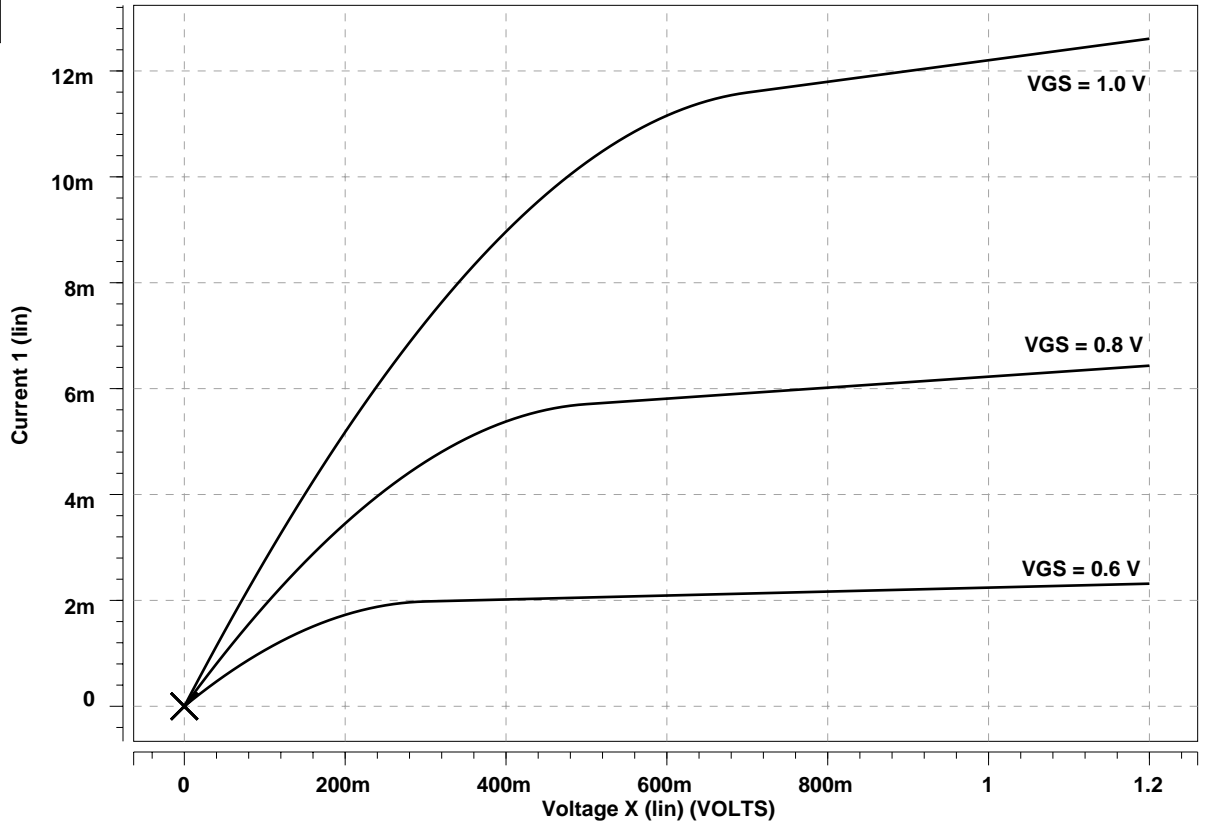
m1 d g 0 0 pmos w=10u l=0.13u
vgs 0 g dc=1.2
vds 0 d dc=1

.probe dc id=i1(m1) gm=lx7(m1) gds=lx8(m1)
.dc vgs start=0 stop=1.2 step=0.01

.end
```

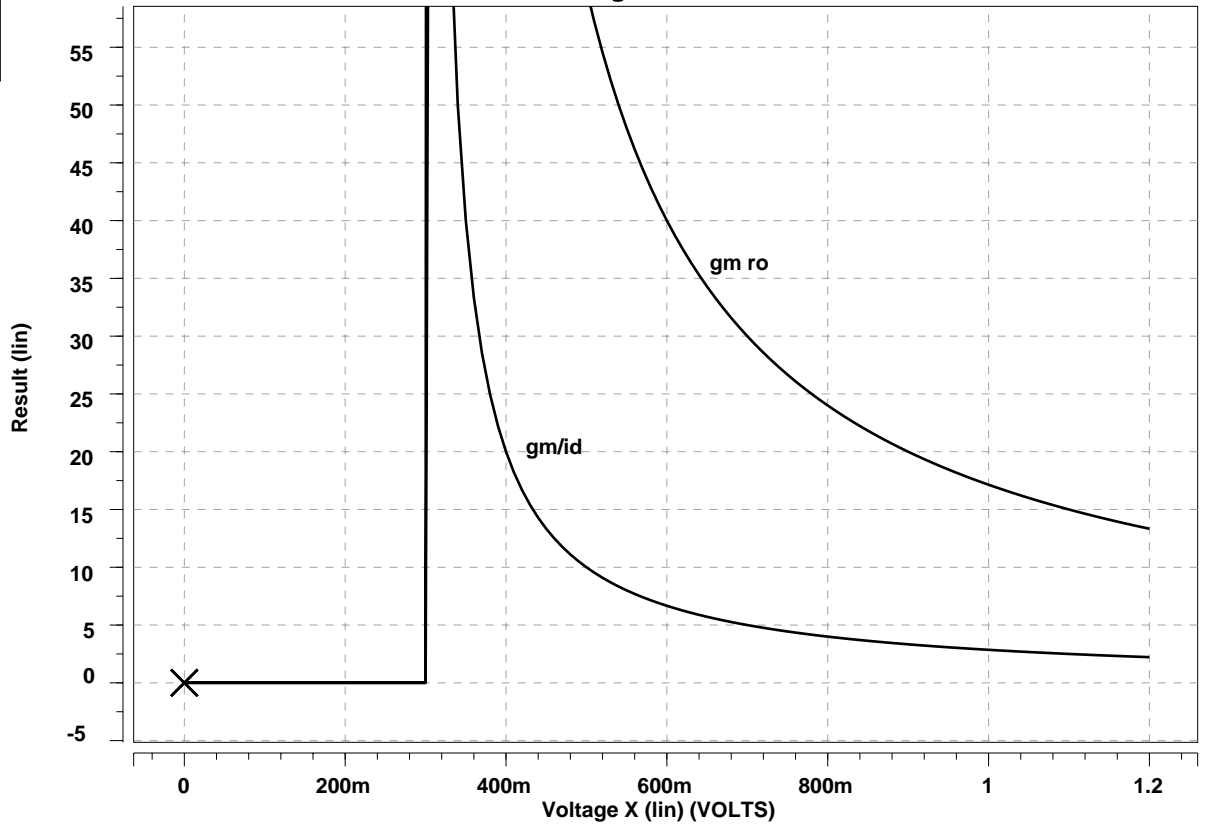
Wave	Symbol
D0:A0:i1(id)	X

NMOS IDS-VDS



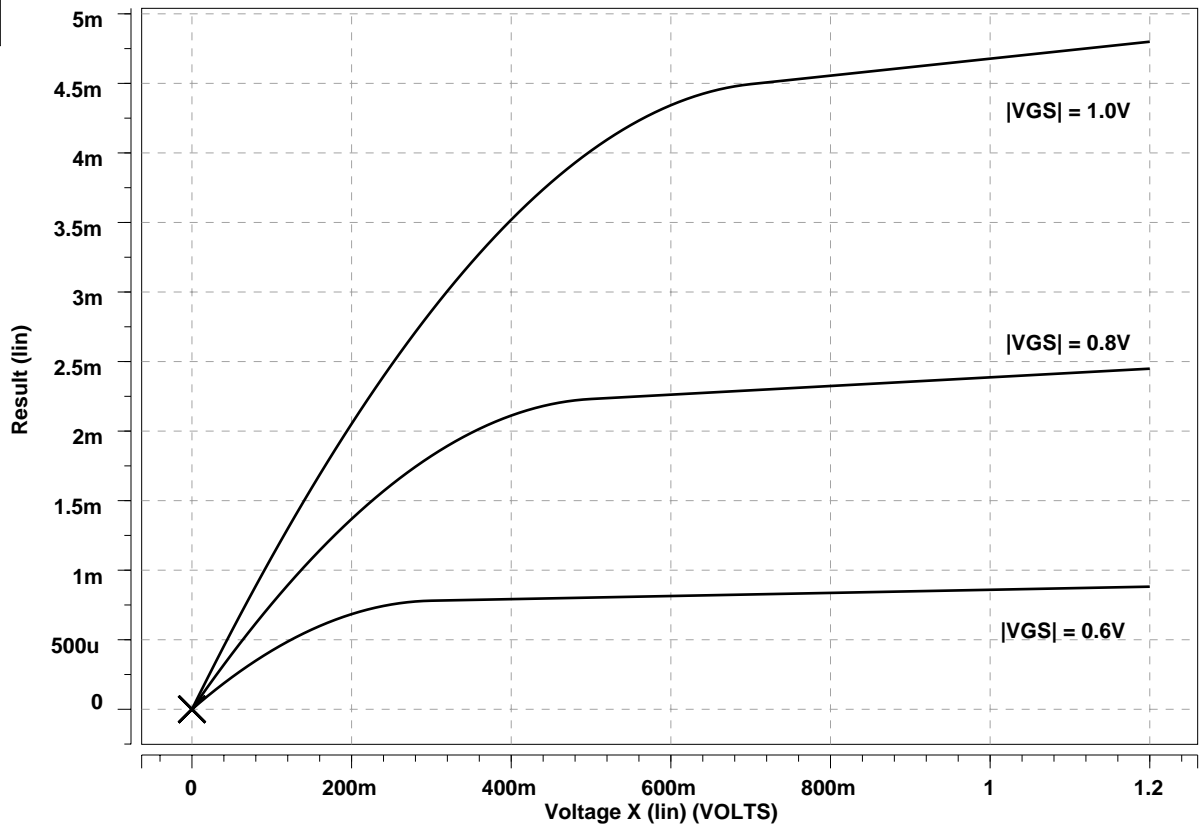
Wave	Symbol
D1:A0:gmid	X
D1:A0:gmro	X

NMOS Small Signal Curves



Wave	Symbol
D0:A0:mid	X

PMOS IDS-VDS



Wave	Symbol
D1:A0:gmid	X
D1:A0:gmo	X

PMOS Small Signal Curves

