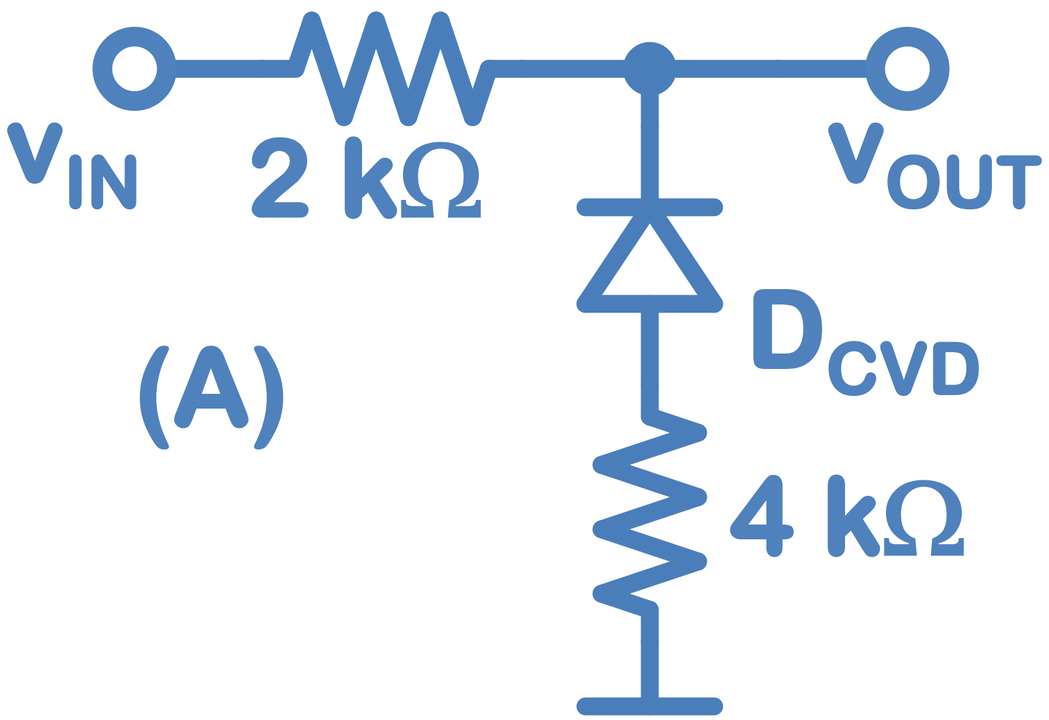
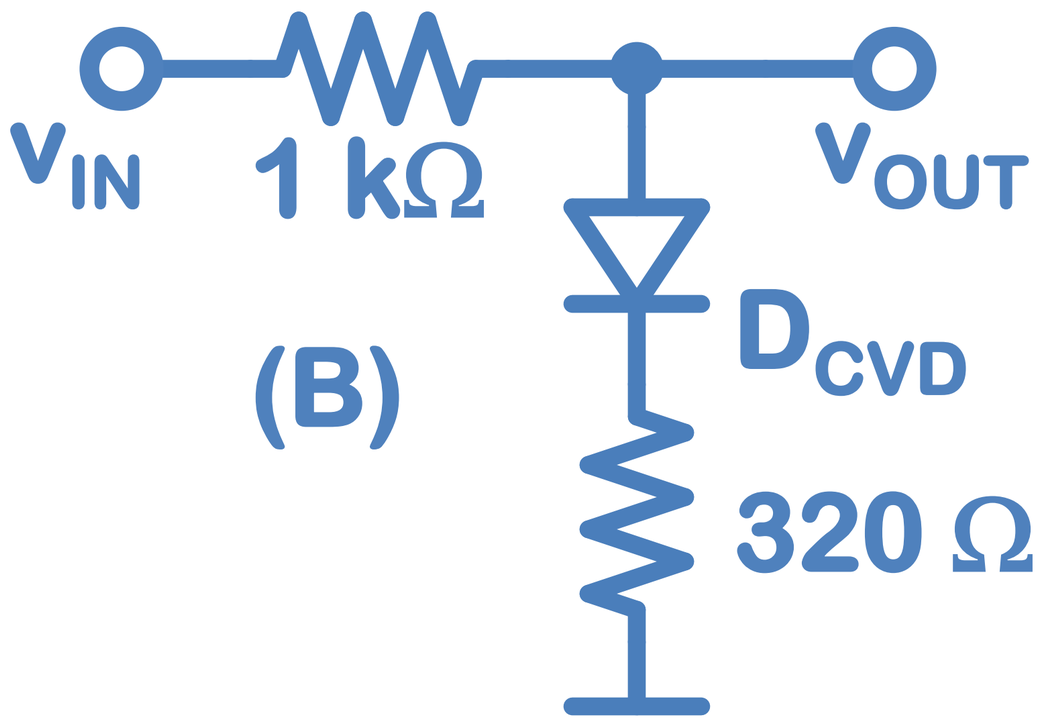
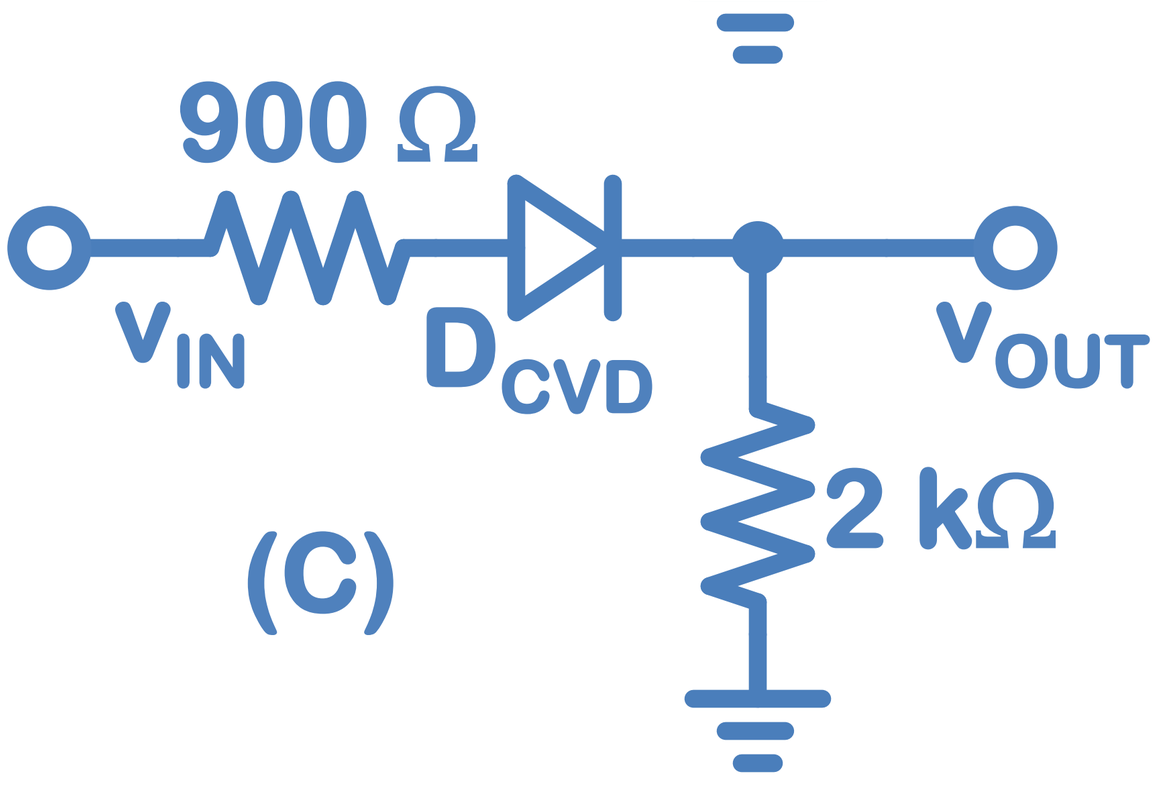
Problem 3. Find the equations and plot $v_{OUT}(v_{IN})$ for each circuit.



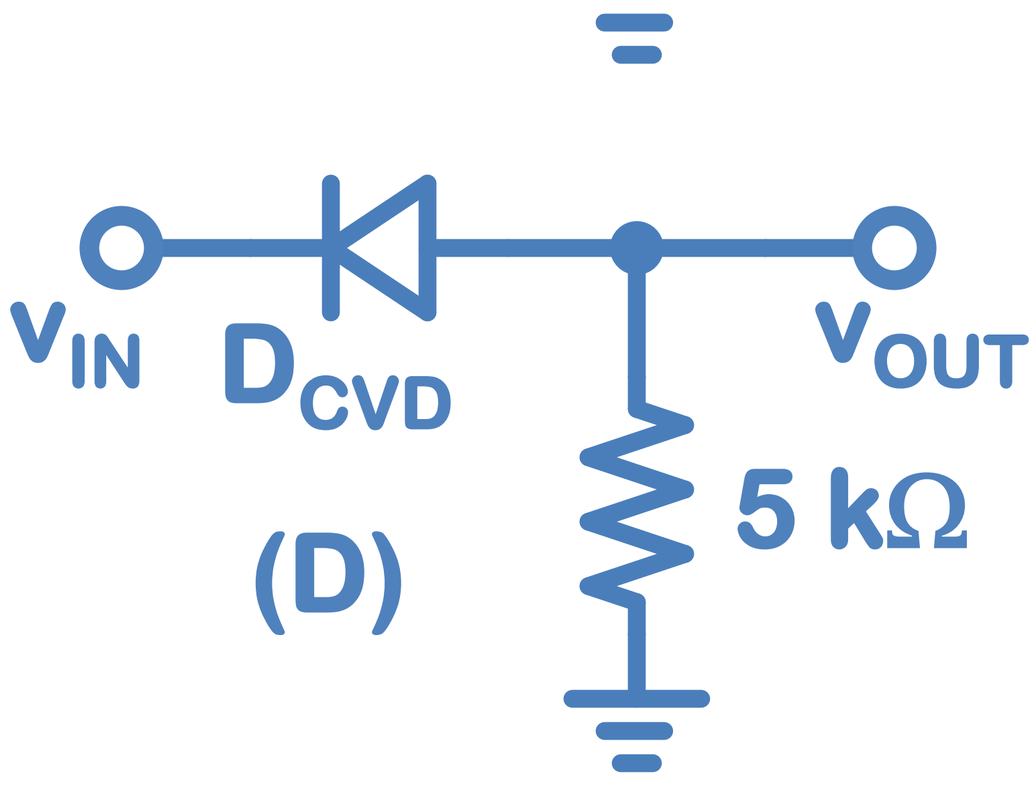
(A)



(B)



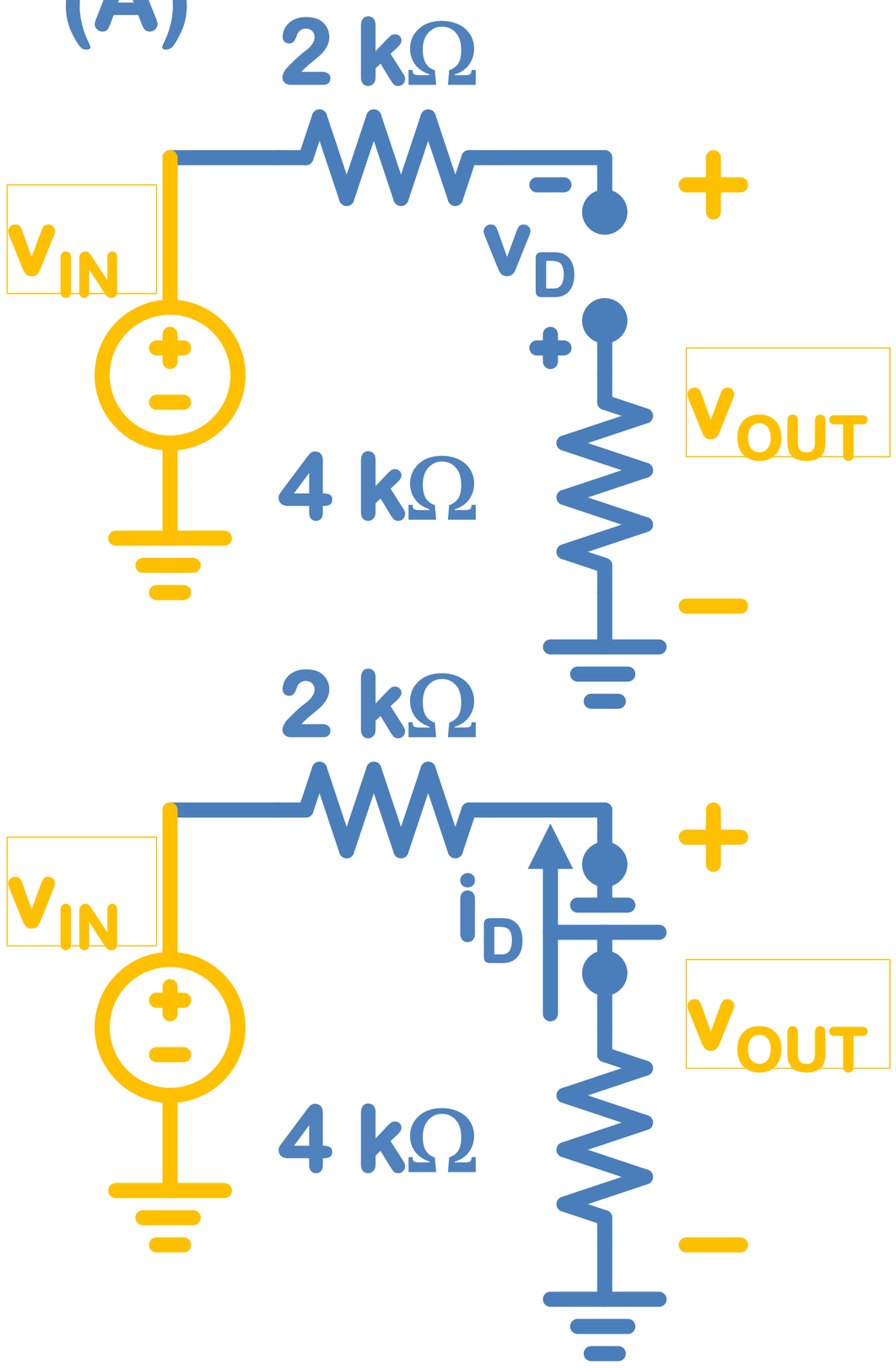
(C)



(D)

Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.

(A)



$v_{OUT}=v_{IN}$

$v_D=-v_{IN}$

$v_D<0.7$, when $v_{IN}>-0.7$

$v_{OUT}=0.67(v_{IN}+0.7)-0.7$

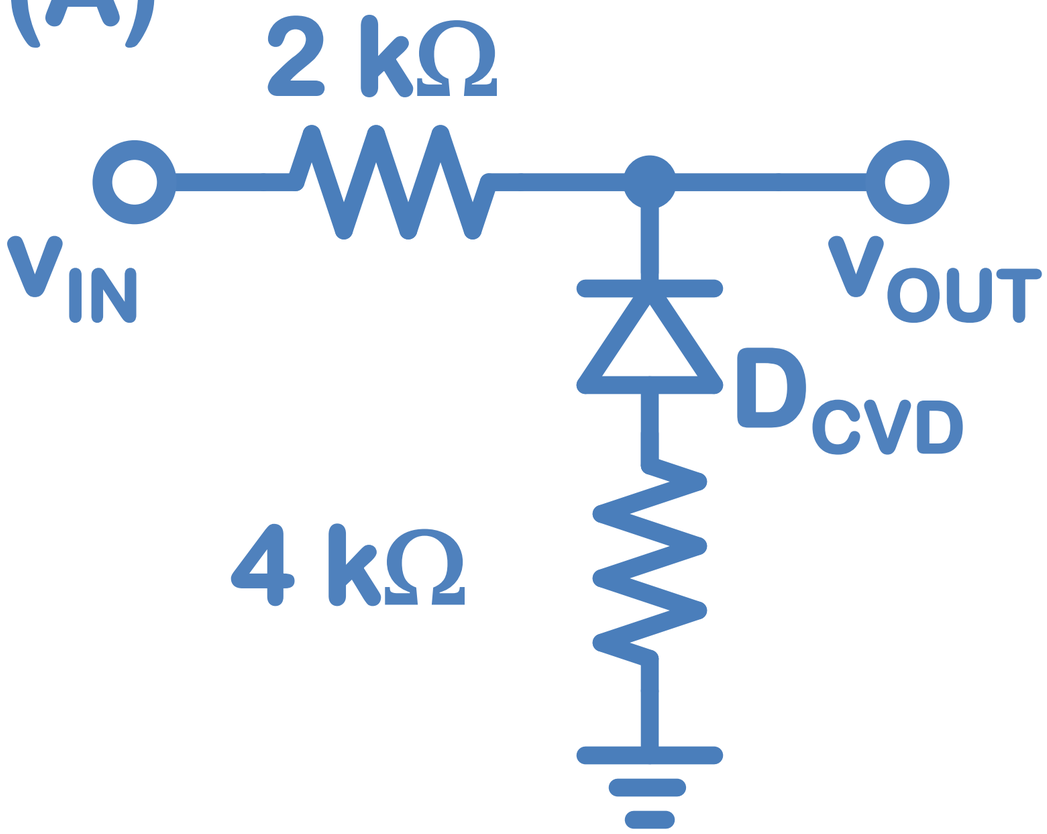
$v_{OUT}=0.67v_{IN}-0.233$

$i_D=-(v_{IN}+0.7)/6000$

$i_D>0$, when $v_{IN}<-0.7$

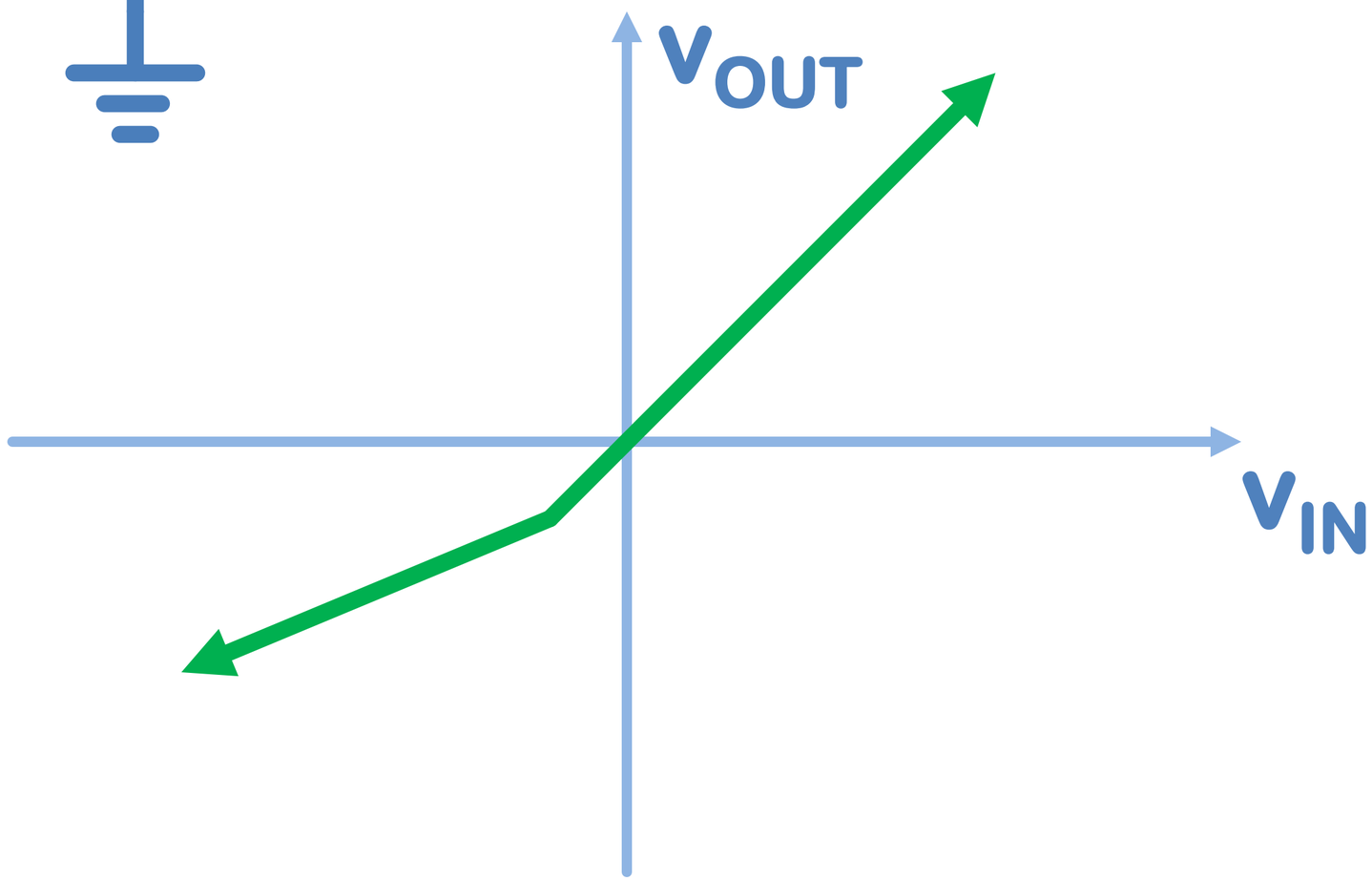
Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.

(A)



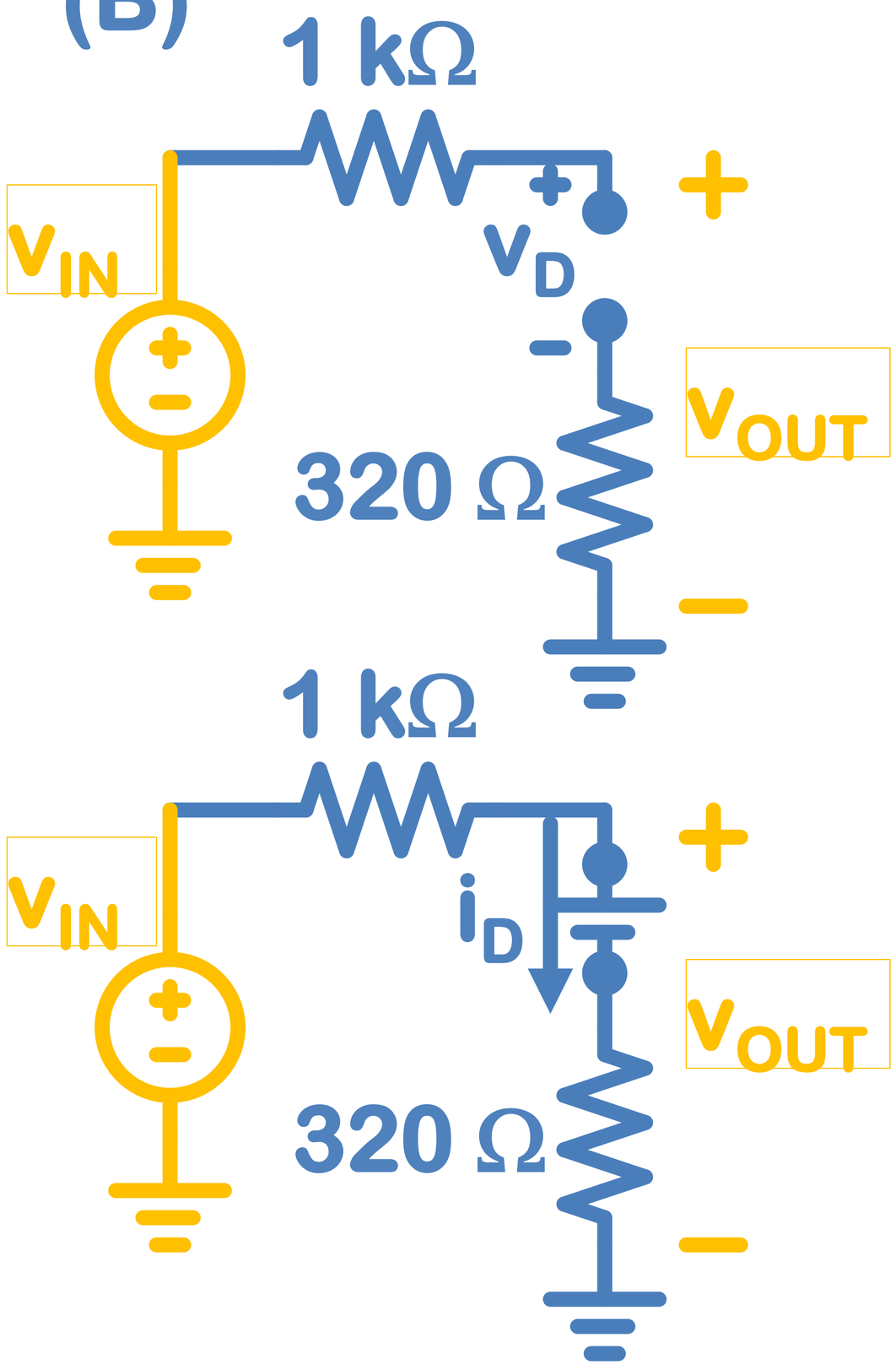
$v_{OUT}=.67v_{IN},-.23$ when $v_{IN}<-0.7$
$v_{OUT}=v_{IN}$, when $v_{IN}>-0.7$

**the equal can go with either case*



Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.

(B)



$v_{OUT}=v_{IN}$

$v_D=v_{IN}$

$v_D<0.7$, when $v_{IN}<0.7$

$v_{OUT}=0.24(v_{IN}-0.7)+0.7$

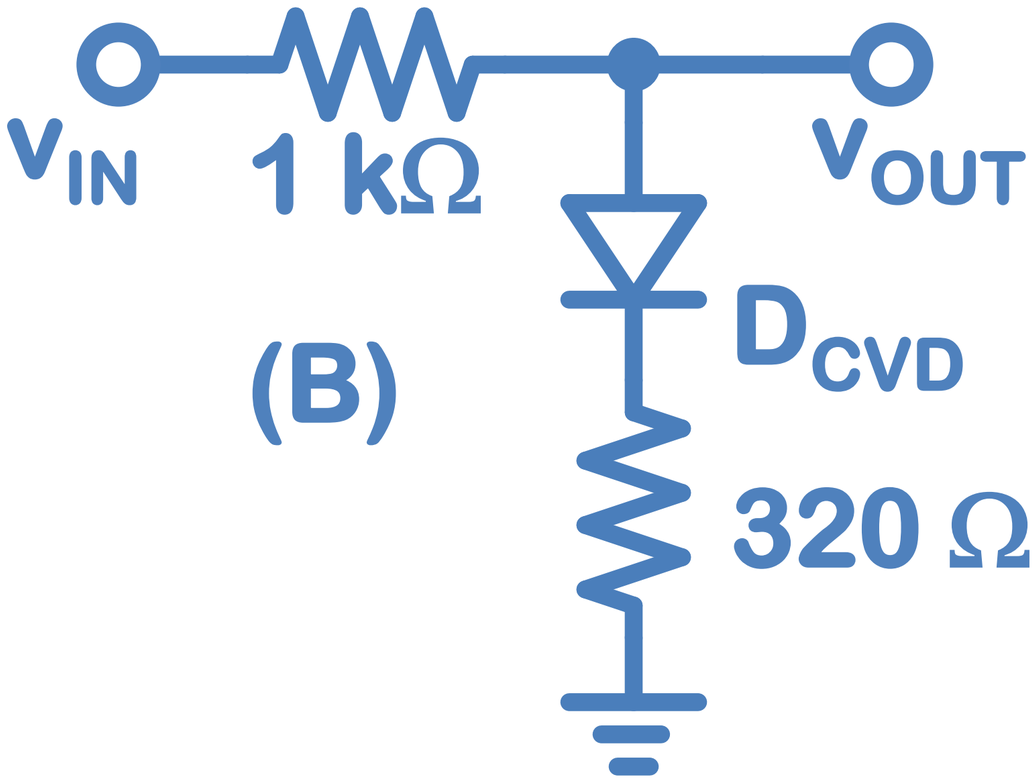
$v_{OUT}=0.24v_{IN}+0.53$

$i_D=(v_{IN}-0.7)/1320$

$i_D>0$, when $v_{IN}>0.7$

Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.

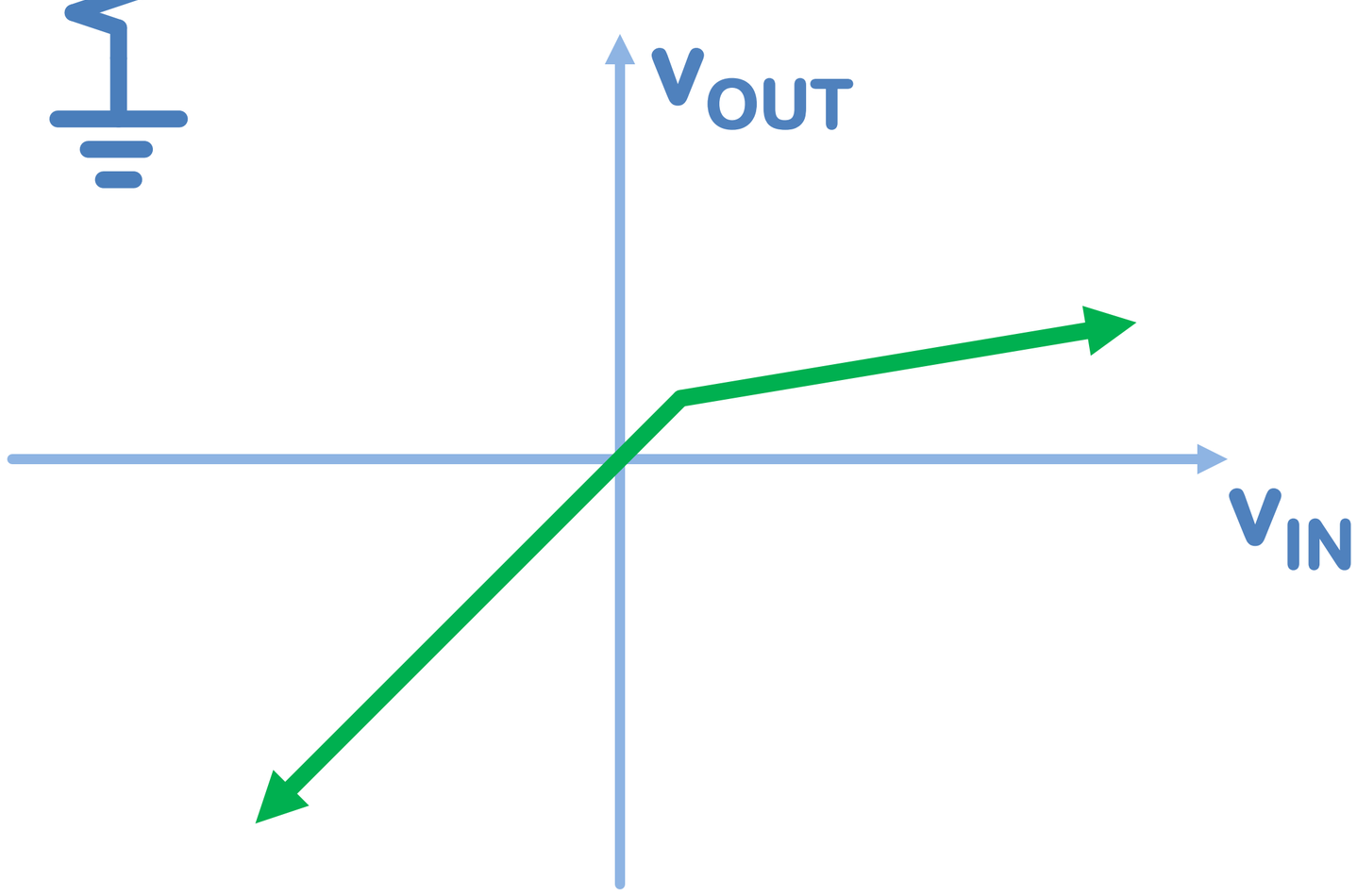
(B)



(B)

$v_{OUT}=v_{IN}$, when $v_{IN}<0.7$
$v_{OUT}=0.24v_{IN}+.53$ when $v_{IN}>0.7$

the equal can go with either case



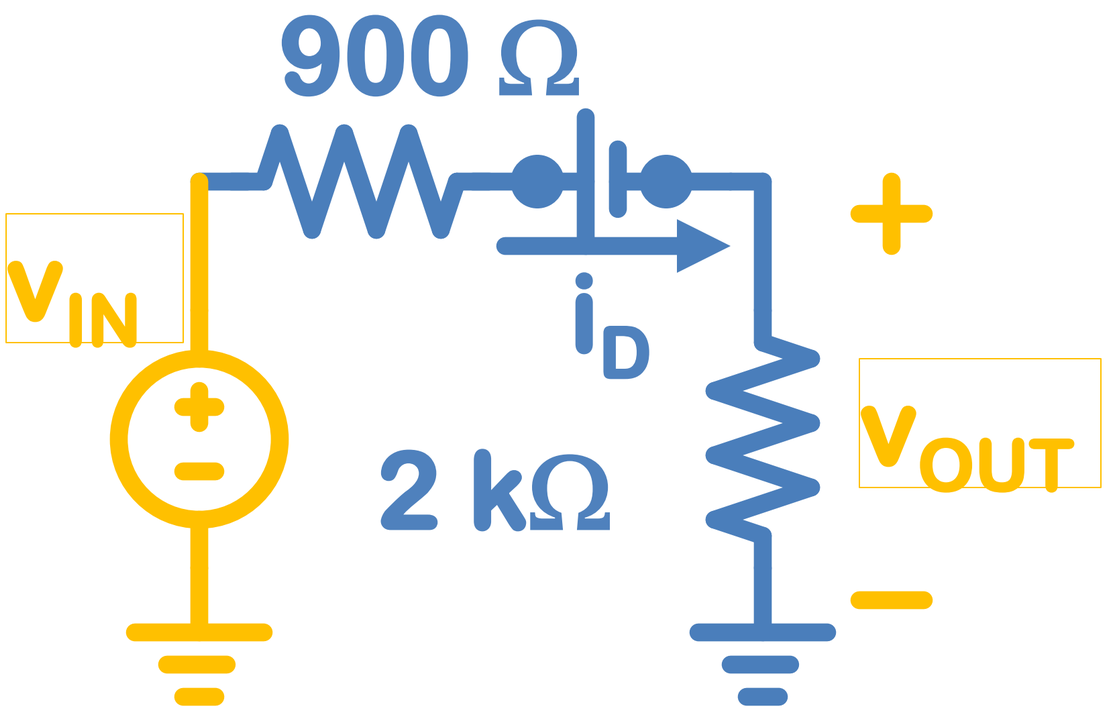
Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.

(C)

$v_{OUT}=0$

$v_D=v_{IN}$

$v_D<0.7$, when $v_{IN}<0.7$

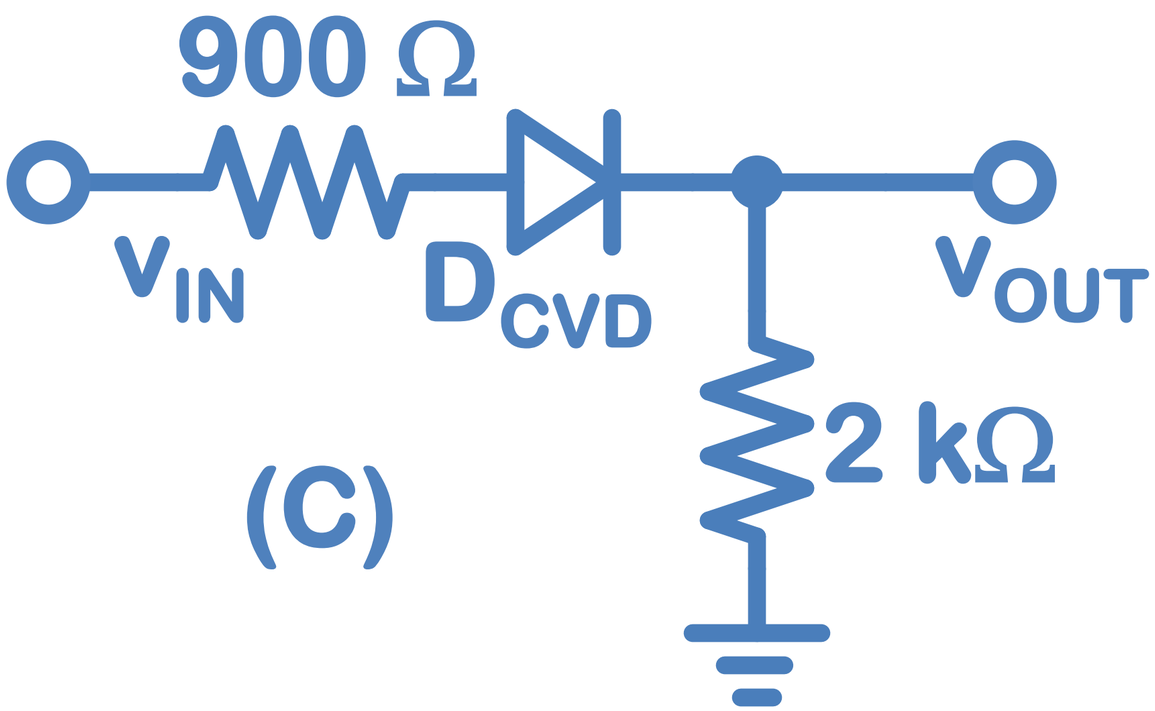


$v_{OUT}=0.7(v_{IN}-0.7)$

$i_D=(v_{IN}-0.7)2900$

$i_D>0$, when $v_{IN}>0.7$

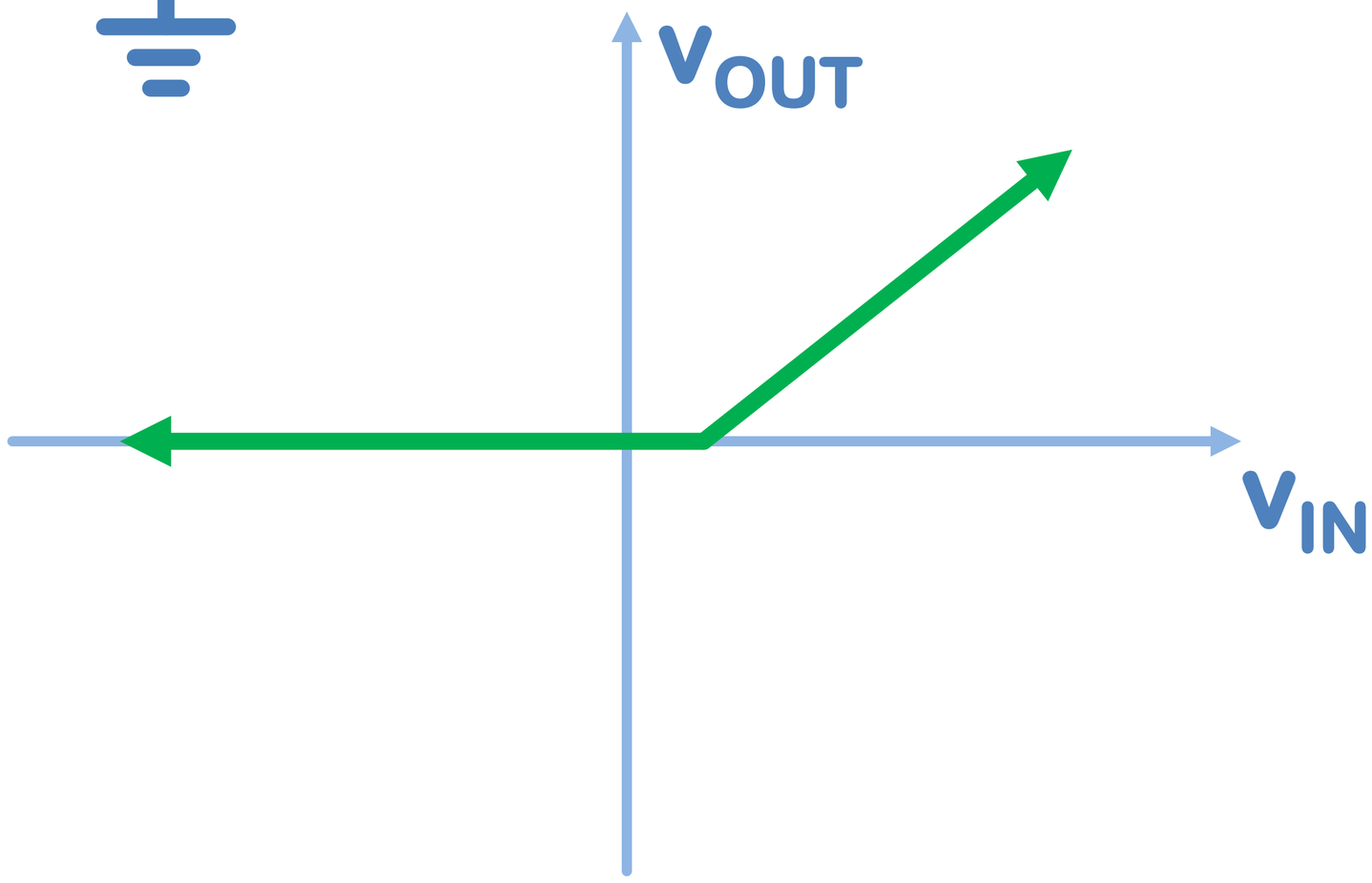
Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.



(C)

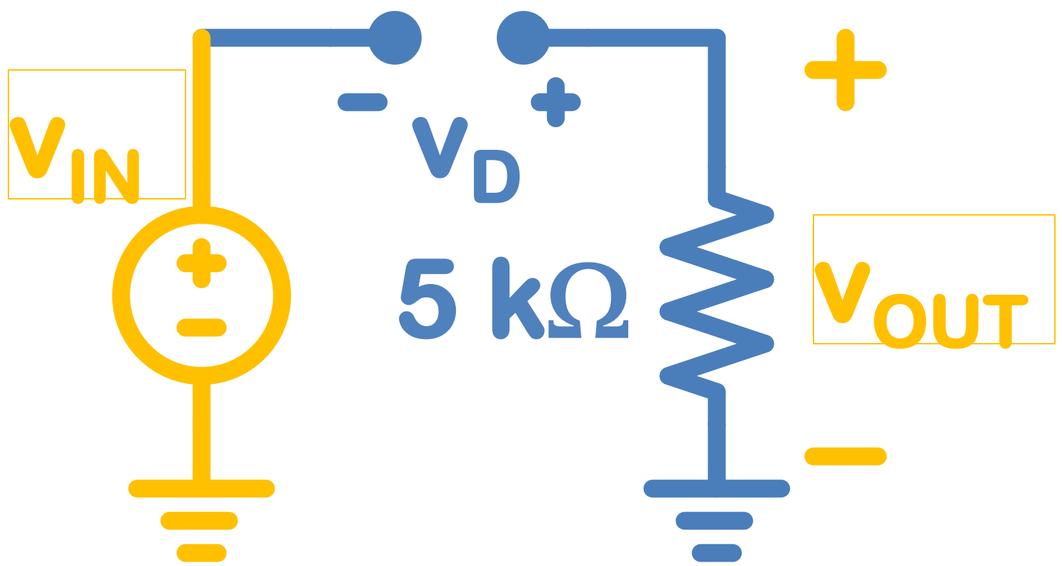
$v_{OUT}=0.7(v_{IN}-0.7)$ when $v_{IN}>0.7$
$v_{OUT}=0$, when $v_{IN}<0.7$

**the equal can go with either case*



Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.

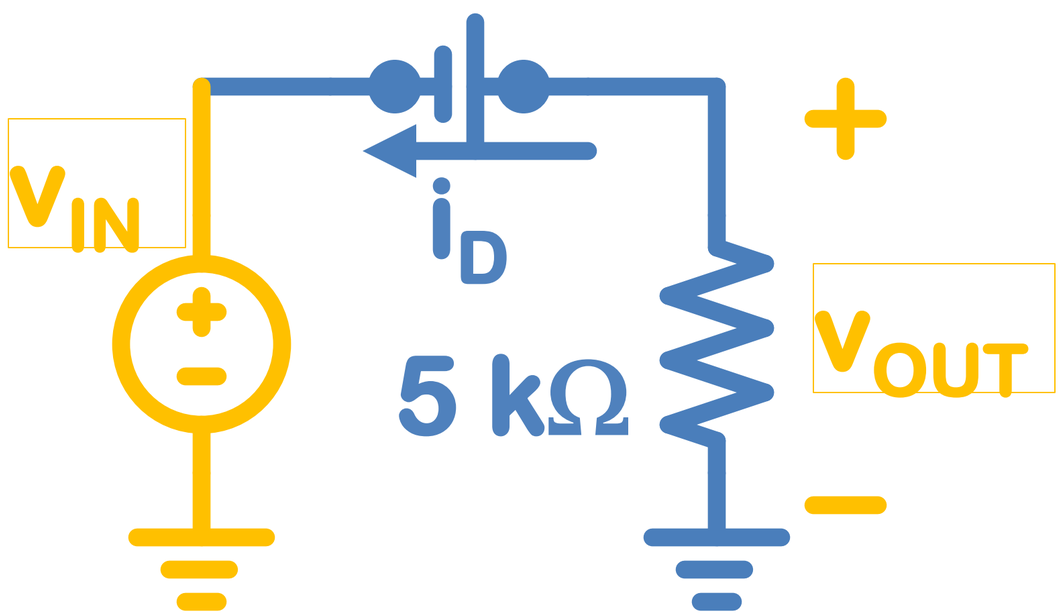
(D)



$v_{OUT}=0$

$v_D=-v_{IN}$

$v_D<0.7$, when $v_{IN}>-0.7$



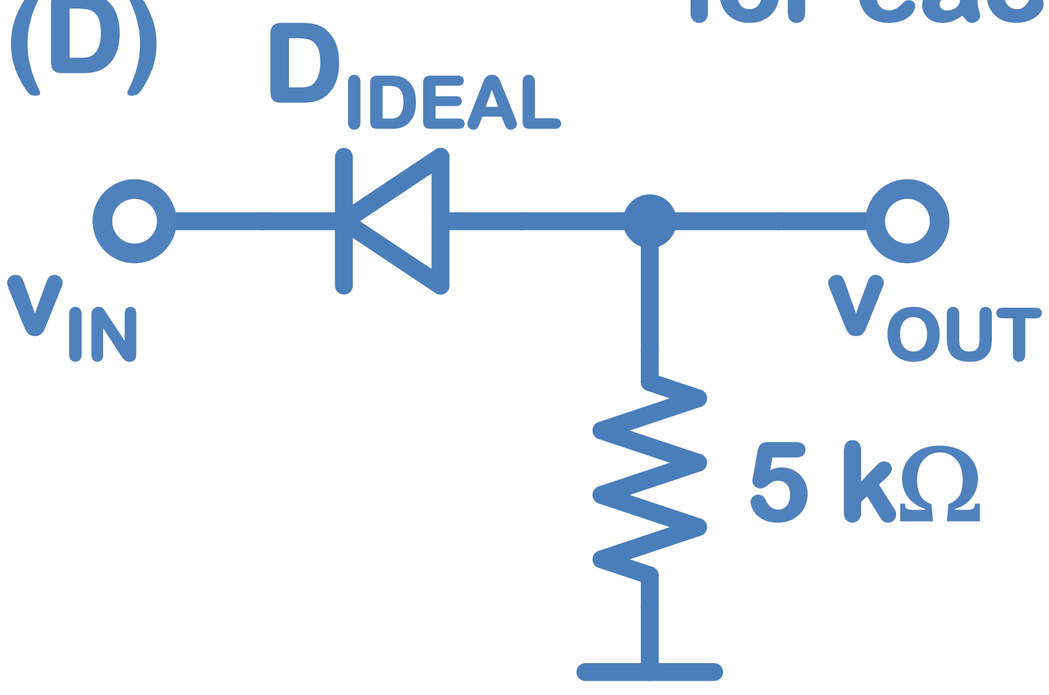
$v_{OUT}=v_{IN}+.7$

$i_D=-(v_{IN}+.7)/5000$

$i_D>0$, when $v_{IN}<-0.7$

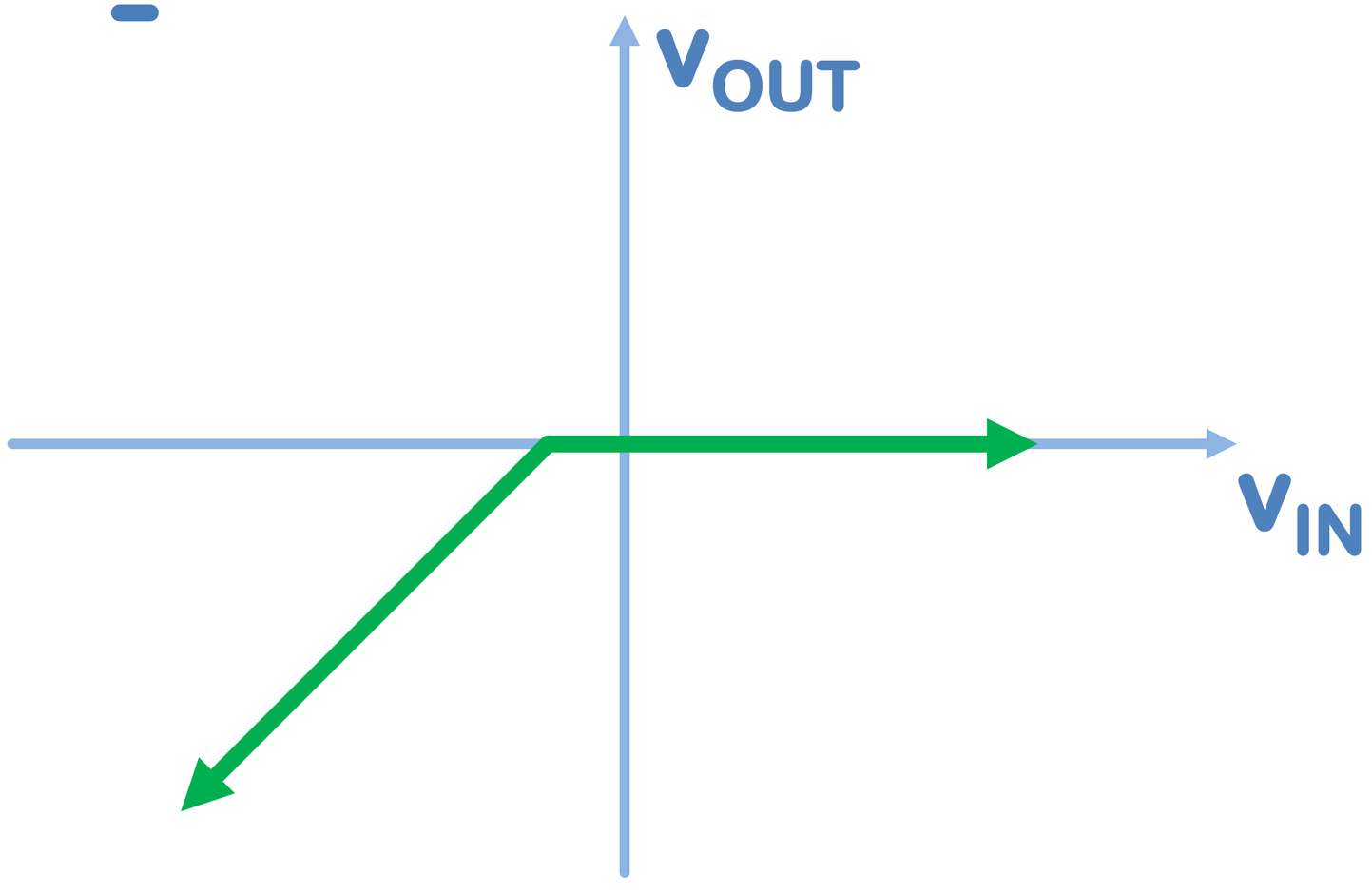
Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.

(D)

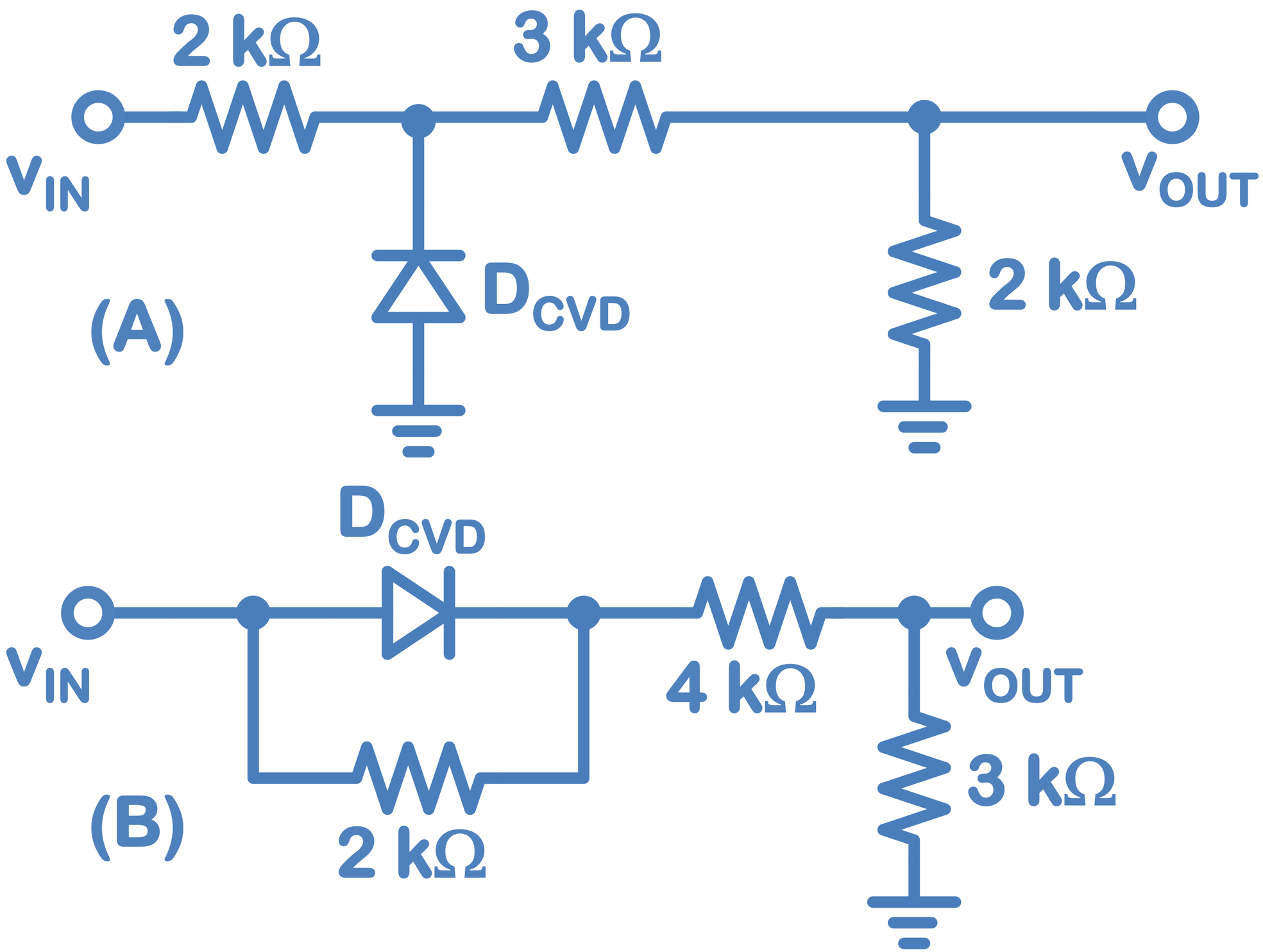


$v_{OUT}=0$, when $v_{IN}>-0.7$
$v_{OUT}=v_{IN}+.7$ when $v_{IN}<-0.7$

**the equal can go with either case*



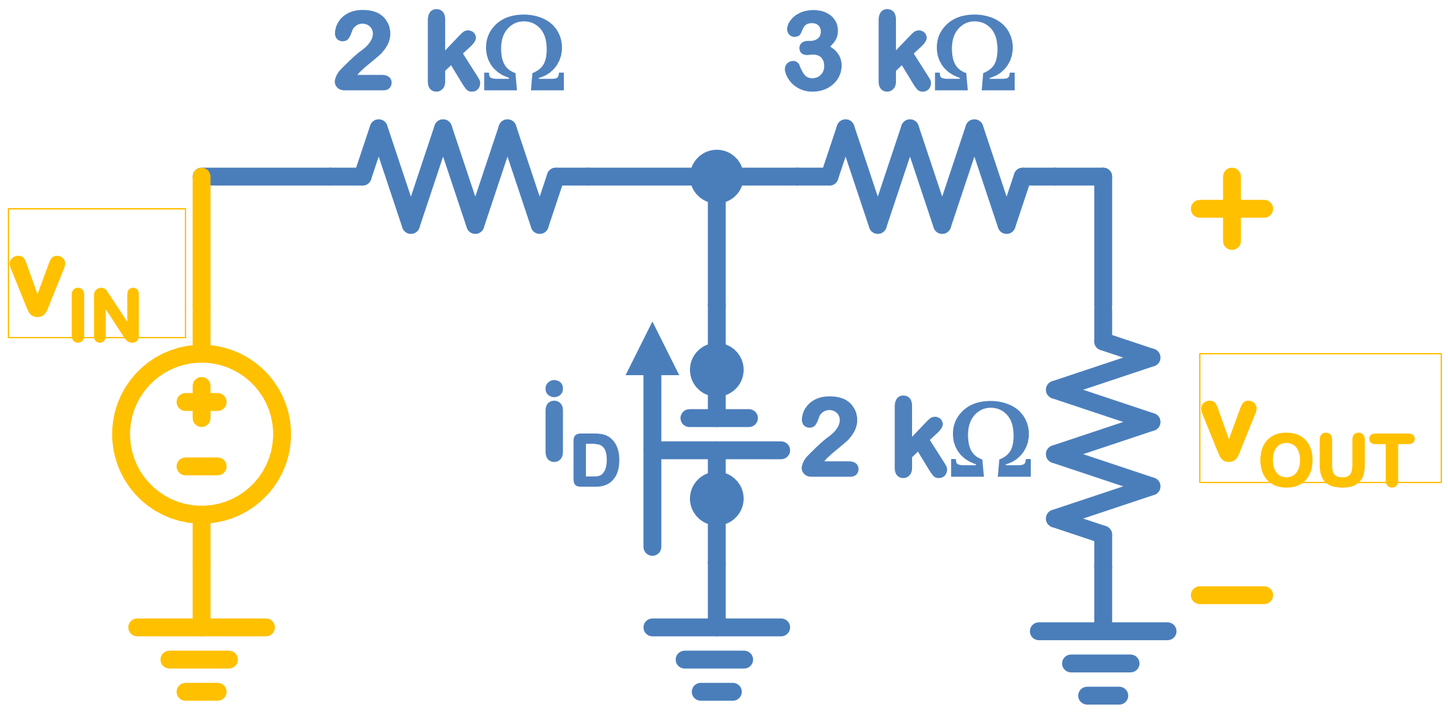
Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.



Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.

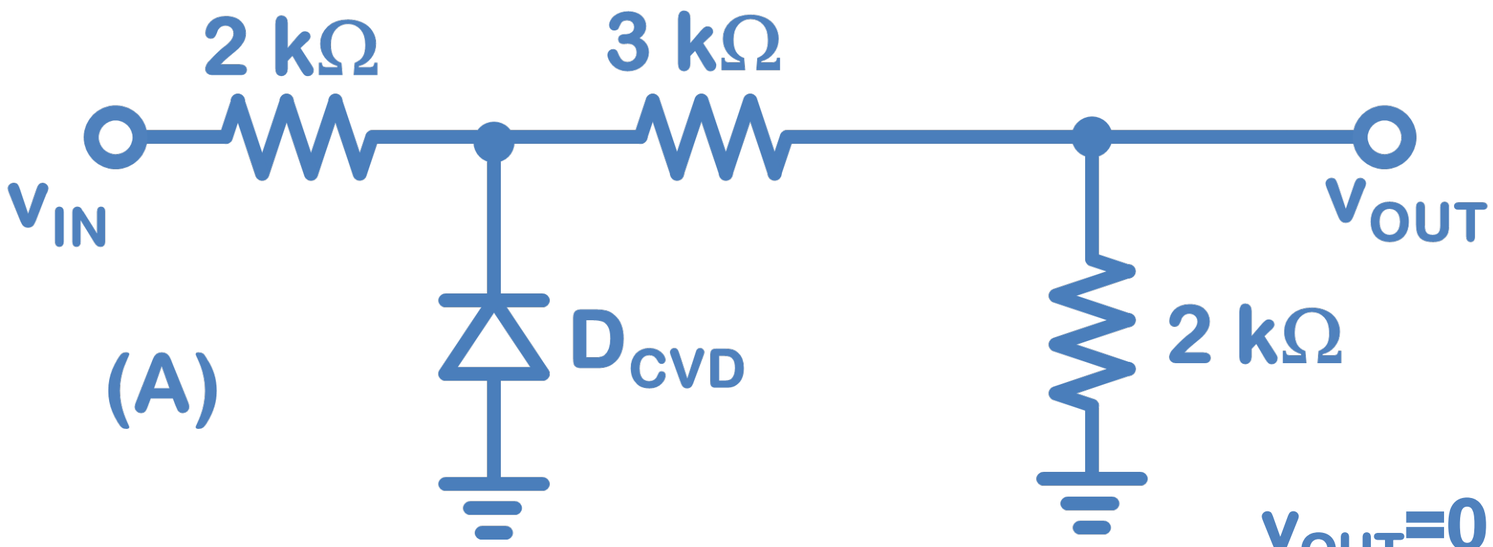
(A)

$v_{OUT}=0.286v_{IN}$
$v_D=-0.714v_{IN}$
$v_D<0.7$, when $v_{IN}>-0.98$



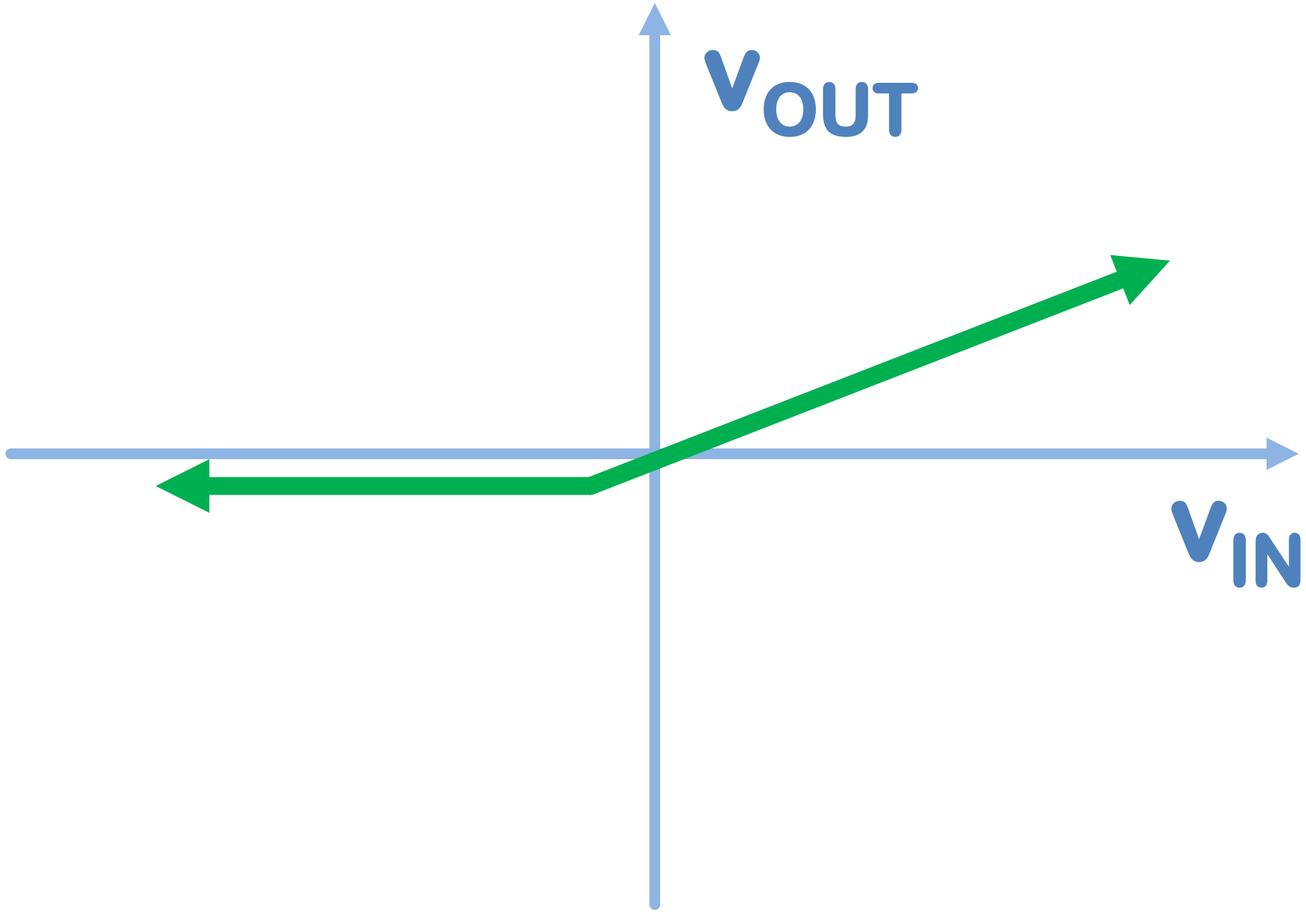
$v_{OUT}=-0.7(2/5)=0.28$
$i_D=-(v_{IN}+.7)/2000-0.7/5000$
$i_D>0$, when $v_{IN}<-0.98$

Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.



v_{OUT}=0.28, when v_{IN}<-0.98

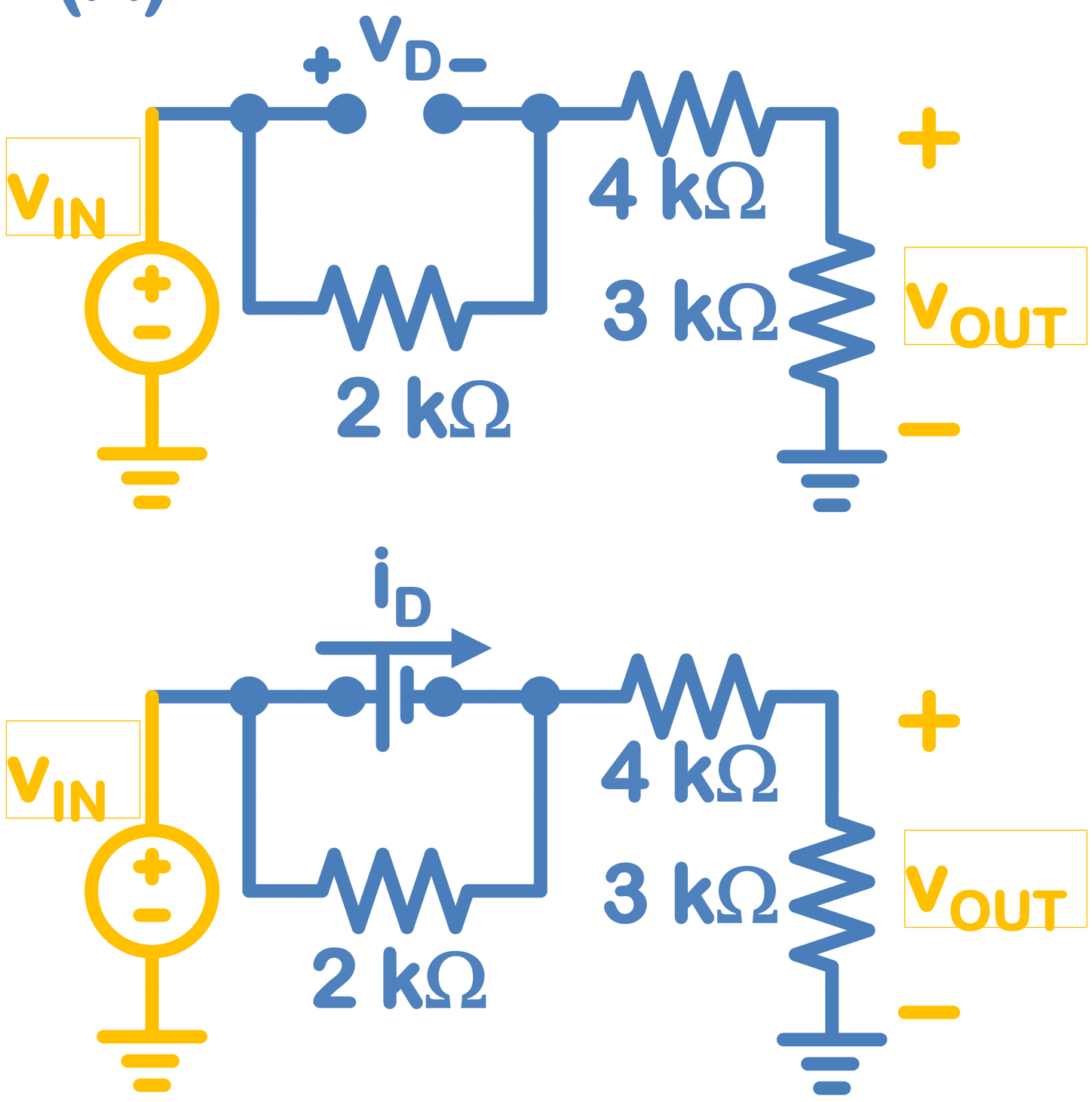
v_{OUT}=0.286v_{IN}, when v_{IN}>-0.98



*the equal can go with either case

Find the equation and plot $v_{OUT}(v_{IN})$ for each circuit.

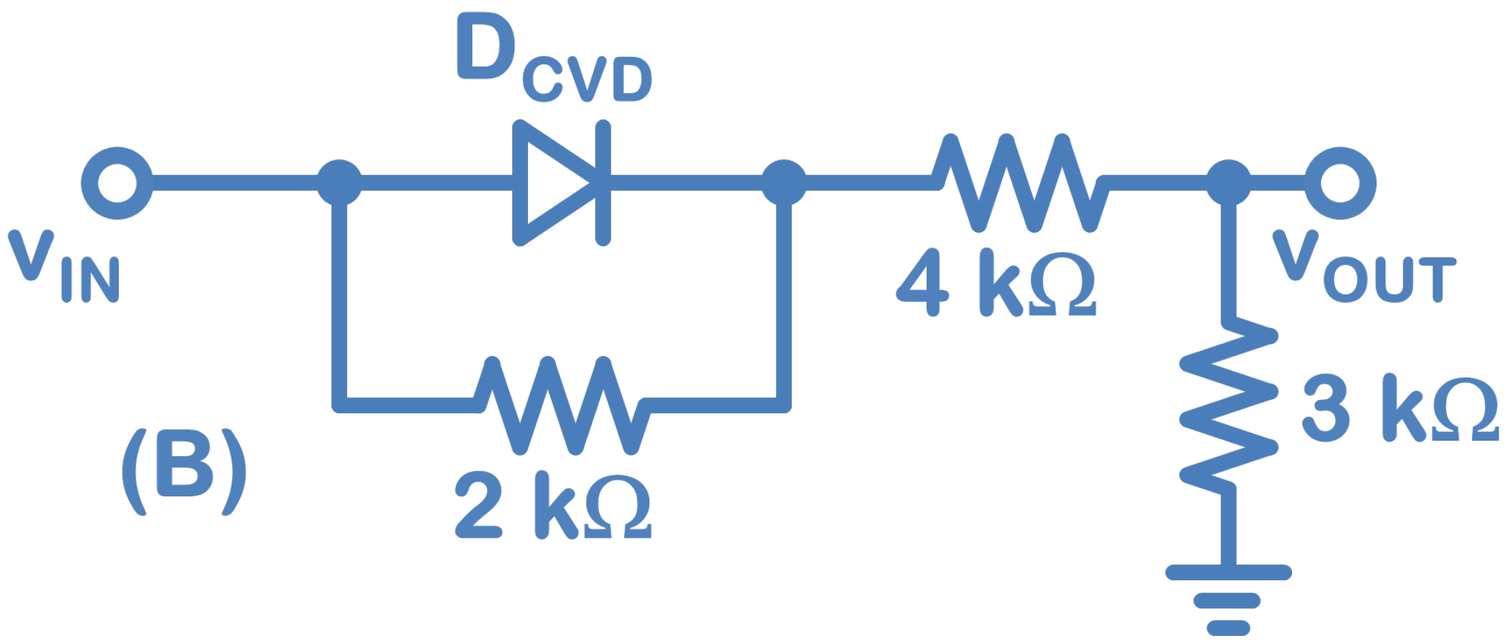
(A)

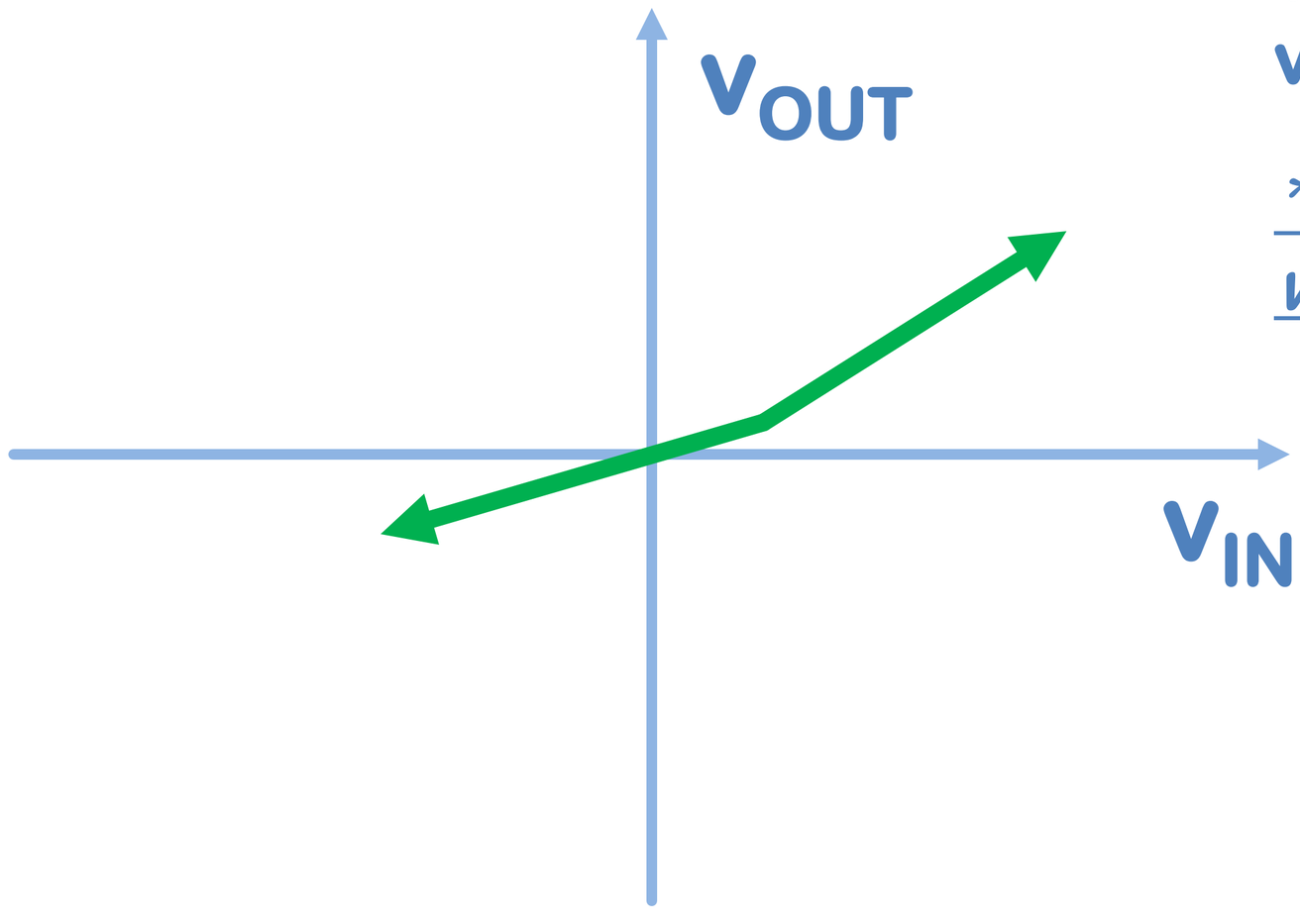


$v_{OUT}=(3/9)v_{IN}$
$v_D=(2/9)v_{IN}$
$v_D<0.7$, when $v_{IN}<3.15$

$v_{OUT}=(3/7)(v_{IN}-0.7)$
$i_D=(v_{IN}-0.7)/7000-0.7/2000$
$i_D>0$, when $v_{IN}>3.15$

Find the equation and plot $v_{OUT}(v_{IN})$ D_{IDEAL} for each circuit.





$v_{OUT}=(1/3)v_{IN}$, when $v_{IN}<3.15$
$v_{OUT}=(3/7)(v_{IN}-0.7)$, when $v_{IN}>3.15$

*the equal can go with either case