

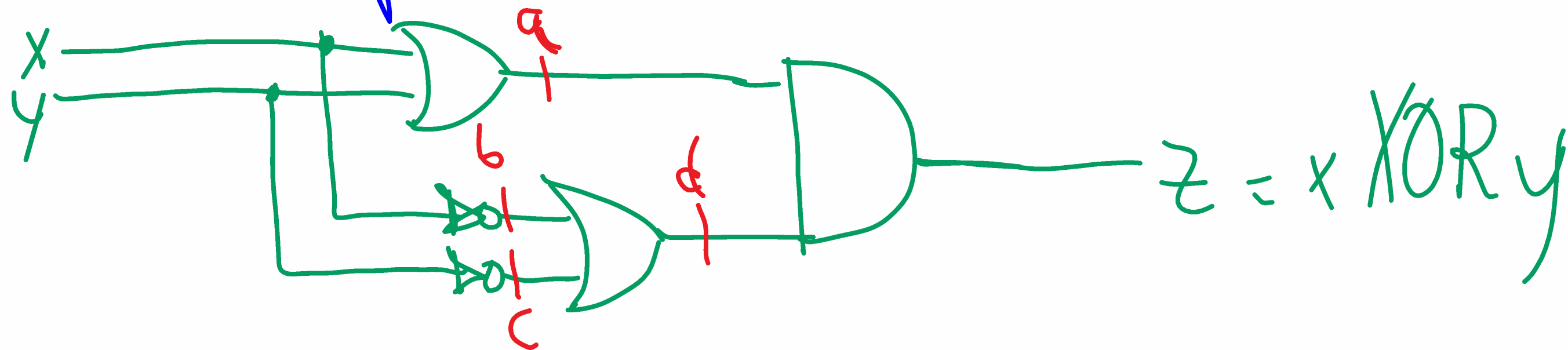
Last Day homework:

Write a program that

1) Defines 3 variables x, y, z

2) Makes $z = x \text{ XOR } y$

Logic circuit equivalent to XOR



Thw 18 Oct 2018

Hint: $\neg x \equiv \text{"not } x\text{"}$

$x || y \equiv \text{"} x \text{ OR } y \text{"}$

$x \&\&y \equiv \text{"} x \text{ AND } y \text{"}$

Logic variables allow us
to rewrite an IF-THEN
as a formula.

Example:

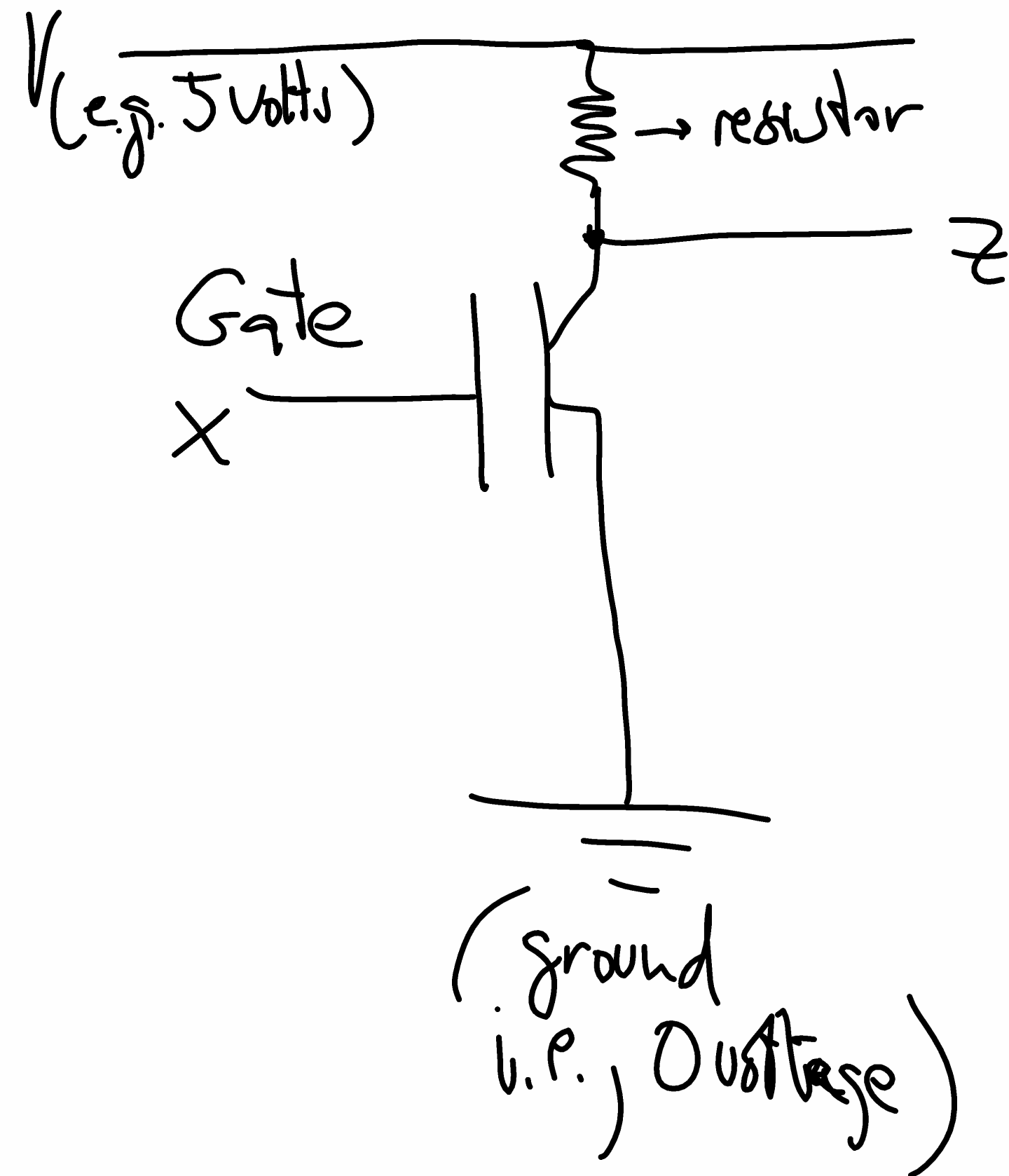
```
if (X > 7) {  
    y = y + 1  
}
```

Exercise: Write this
conditional as
a formula:

Solution $y = y + (X > 7)$

This is more efficient. No branching
prediction needed
by CPU

TRANSISTOR

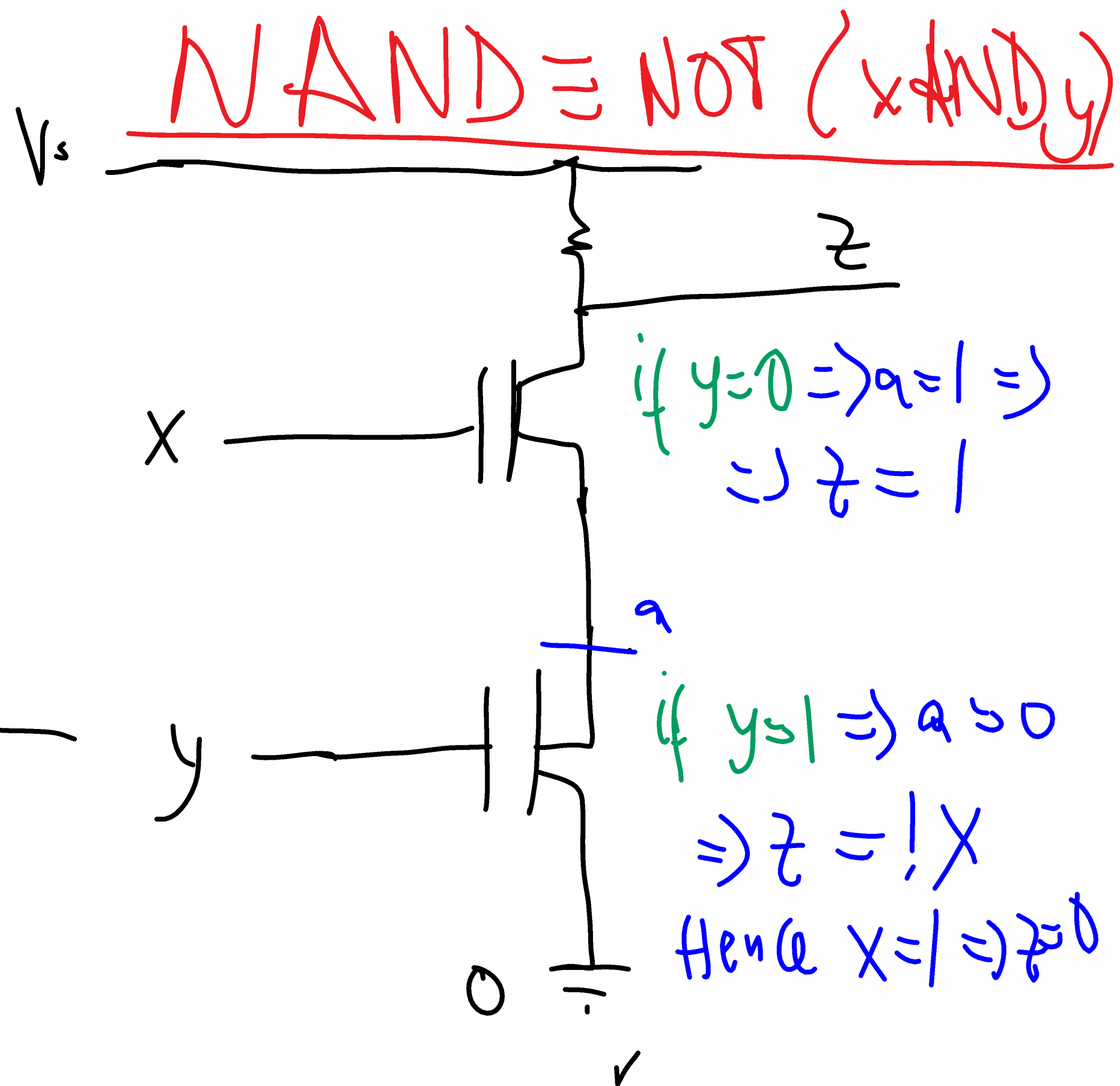
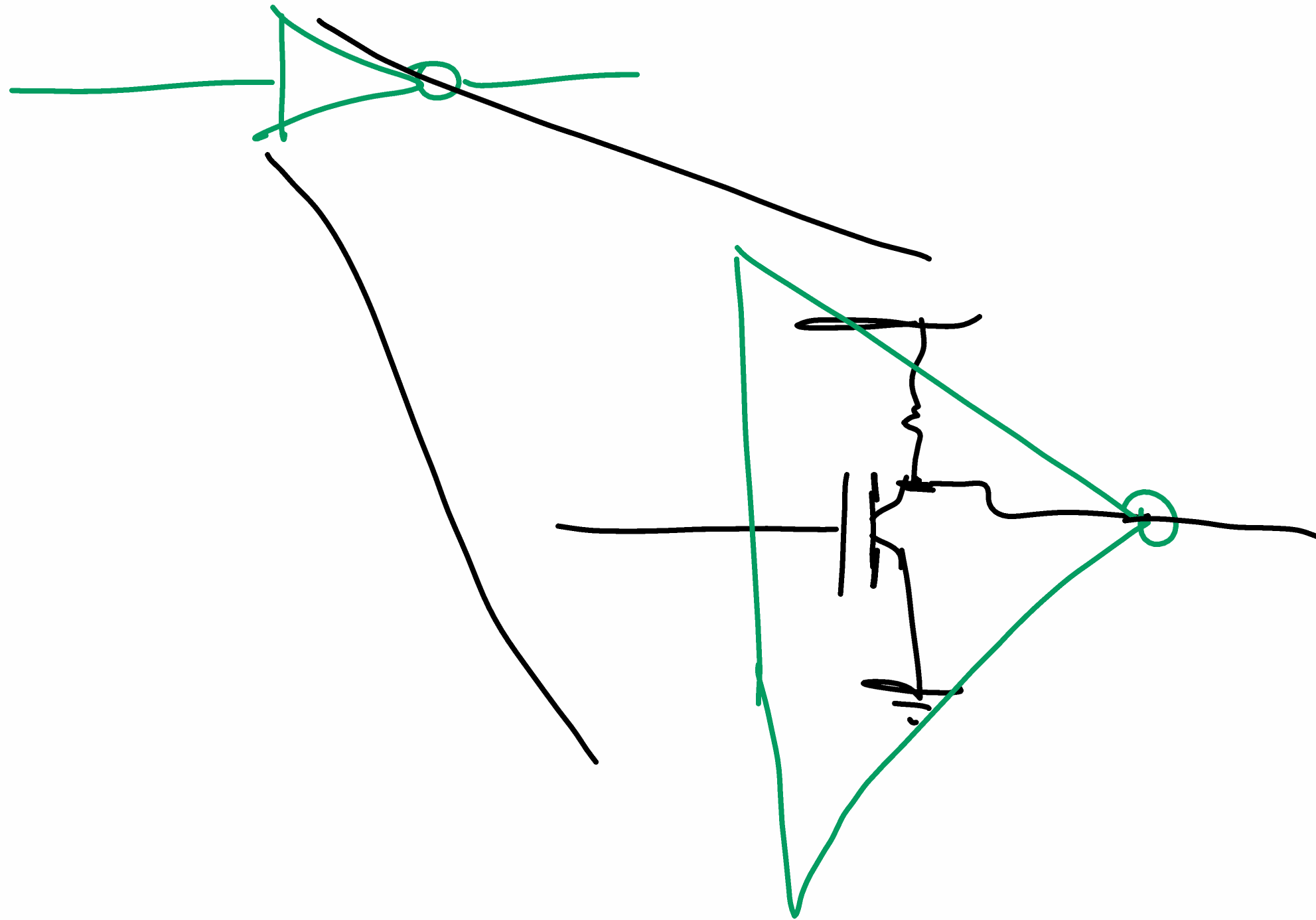


X	Z
5	0
0	5

This is equivalent to truth table of NOT (if we interpret 5v as 1, 0v as ϕ)

Hence, transistor provides a switch or NOT gate

Now we know



Exercise Solution (see page 1)

```
var x=1  
var y=0
```

```
var a= x || y  
var b= !x  
var c= !y  
var d= b || c
```

```
var z= a && d
```

```
// what will alert message show?  
alert( z*(3+5)+(1-z)*9 )
```