HOMEWORK 2

1. Construct the DAG for the following expression using the Value-Number method:

$$(x + y)\times(x - y) + (2 + x + y)\times(2 + x - y)$$

2. Given the following code segment:

```
x = 17;
y = 3;
while (x > y)
        if (y < 20)
                y = 3 * x + 2 * y;
        else
                y = 2 * y;
t = x + y;
```

   Generate the three-address code for this code segment.

3. Translate the following expression using the "avoiding redundant gotos" translation scheme:

```
if (a == b && c == d || e == f)
        x = 1;
```

4. Add semantic rules to the AG in page 47 (Lecture 2, Part 2) to translate the flow-of-control statement: `do S while ( B ) ;`

Then translate the following statement:

```
do
        x = x + y;
while (x < 0 && !(y > x));
```

(*For full credit, show how you derived your answer*)