Given the following code fragment identify all areas in which the loop may be optimized. For each optimization, describe the principle of optimization being used.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>

double f(double x) {
    return 1/(x+0.5);
}

int main(int argc, char ** argv) {
    int n = 100000;
    int i;
    double * x;
    double * y;
    x = (double *) malloc(sizeof(double)*n);
    y = (double *) malloc(sizeof(double)*n);

    for(i=0;i<n;i++) {
        if(i==0||i=n-1) {
            x[i]=0.0;
            y[i]=0.0;
        }
        x[i] = pow((double)i*0.001,2.0);
        y[i] = f(x[i])+2.0*sin(3.0);
    }

    free(x);
    free(y);
}
```