```
library(numDeriv)
fletcher.reeves <- function(f, x, tol) {
	beta <- 1
	d <- -grad(f,x)
	repeat {
		g <- function(a) {f(x + a * d)}
		step <- golden(g,0,5,tol)
		new.x <- x + step * d
		if (dist(rbind(new.x,x)) < tol) {
			return(new.x)
		}
		beta <- (grad(f,new.x) %*% grad(f,new.x)) / (grad(f,x) %*% grad(f,x))
		d <- -grad(f,new.x) + as.vector(beta) * d
		x <- new.x
	}
}
```