Topic 9 problems

1. In nonparametric bootstrapping, we resample the original data instead of resampling from a parametric model fitted to the data. Implement nonparametric bootstrapping for the following problem.

Generate some initial data like this:

```
x = –10 + 20*rand(1,50);
y = 0.05*(x–3).^2 + 5 + randn(size(x));
```

This gives us 50 (x,y) pairs, which would normally come from an experiment rather than being generated artificially. Generate each set of bootstrap data by picking 50 of these pairs randomly, with replacement. Make a sum-of-squares fit of the following function to the initial dataset and to 100 resampled datasets:

```
fitfn = @(x,p) p(1)*(x–p(2)).^2 + p(3);
```

Report the sum-of-squares fit parameters for the initial dataset and their bootstrapped standard errors.