

4. (10 pts)

Complete the following MATLAB function that computes the integral $\int_{-2}^5 f(x)dx$ of the function $f(x)$ plotted in the figure below, after N trials using a Monte Carlo method. Take all the required numerical inputs from the figure shown below.

Hint: Generate a set of N uniformly distributed random points (x, y) within a rectangular area and determine the fraction of them that fall within the area of interest (i.e., under $f(x)$).

```

begin code
1  function val = mcIntegral(fh,N)
2  % Inputs: fh:  the function handle to vectorized function f(x)
3  %          -2, 5:  the lower and upper integration bounds
4  %          N:  the number of trials
5  % Output: val:  the calculated value of the integral
6
7
8  A = _____;% enclosing area
9
10
11 x =          rand(          )
12  _____
13
14
15 y =          rand(          )
16  _____
17
18
19 success = _____;
20
21 val = A * success / N ;
end code

```

