Programming in Java

For each of the following ML definitions write, explain and comment on the closest reasonable Java equivalent code-fragment that you can construct.

(a) fun fact n r = if n = 0 then r
            else fact (n-1) (n*r); [4 marks]

(b) datatype 'a tree = leaf of 'a |
    node of 'a tree * 'a tree * 'a tree; [4 marks]

(c) val v = [1,2,3,7];
    val v2 = map (fn n=>n*n:int) v; [4 marks]

(d) exception Disaster of int;
    raise Disaster 99; [4 marks]

(e) fun recursiveLength nil = 0
    | recursiveLength (a :: b) = 1 + recursiveLength b; [4 marks]