Tutorial Quiz #9 — Solutions

Write a recursive Java method that computes \( \prod_{i=1}^{n} \sqrt{i} = \sqrt{1} \times \sqrt{2} \times \cdots \times \sqrt{n} \) for a given value of \( n \). (Hint: Method Math.sqrt() computes the square root of its argument—note that both the argument and the return value of Math.sqrt() are of type double.)

Answer:

```java
/** Computes and returns the product of the first n square roots. */
public static double prodSqrt(int n) {
    if (n == 0) return 1.0;
    else return Math.sqrt(n) * prodSqrt(n - 1);
}
```

Marking Scheme:

A. 1 mark for declaring the method correctly (with one argument of type int or double, and return value of type double)

B. 1 mark for having a base case for \( n == 0 \) or \( n == 1 \)

C. 1 mark for having the correct return value in the base case

D. 1 mark for having the correct call in the recursive case

E. 1 mark for computing and returning the correct value in the recursive case

Common Errors: