

## EXERCISES ON ABSTRACT SYNTAX

1. Take the example in the section on Basics:  $1+2*4$  and show, by drawing parse trees following the abstract syntax, that it is ambiguous. Then show, also by drawing trees, that it is not ambiguous according to the concrete syntax given.
2. What is the value for the expression as indicated by the parse tree using the concrete syntax?
3. Does the following string follow the abstract syntax for the non-terminal  $F$  of the functional language given in the Examples section? Explain, by showing a top-down expansion of  $F$ .

```
newfun(x, y) =  
  let z = if g(x) then 1 in  
    if h(y) equal 3 times y then z else z plus 1
```

## ANSWERS