

Name: _____

1. Write a small-step semantics for the subset of Python described below. Use evaluation contexts. Refer to the Python web site for documentation regarding the language. You may also use the standard Python interpreter to check your ideas regarding the semantics of the language. If you wish, you may define an abstract syntax for this subset of python instead of using the below concrete syntax.

```
identifier ::= # see the Python Reference Manual
unary_op  ::= "+" | "-" | "not"
binary_op ::= "+" | "-" | "*" | "/" | "%" | "**"
           | "<" | ">" | "==" | ">=" | "<=" | "!=" | "or" | "and"
expression ::= identifier
            | integer # see the Python Reference Manual
            | unary_op expression
            | expression binary_op expression
            | "(" expression ")"
            | "True" | "False"
            | expression "if" expression "else" expression
simple_statement ::= "pass"
                | identifier "=" expression
                | expression
compound_statement ::= "if" expression ":" suite "else" ":" suite
                    | "while" expression ":" suite
stmt_list ::= simple_stmt (";" simple_stmt)* [";"]
statement ::= stmt_list NEWLINE | compound_stmt
suite ::= stmt_list NEWLINE | NEWLINE INDENT statement+ DEDENT
```