1. An `if` statement can have at most how many `else` parts? **1 / 1 балл**

- (•) 1
- ( ) 0
- ( ) Unlimited, i.e., 0 or more

Правильно
Correct.

2. Consider the Boolean expression `not (p or not q)`. Give the four following values in order, separated only by spaces: **1 / 1 балл**

the value of the expression when `p` is `True`, and `q` is `True`,

the value of the expression when `p` is `True`, and `q` is `False`,

the value of the expression when `p` is `False`, and `q` is `True`,

the value of the expression when `p` is `False`, and `q` is `False`,

Remember, each of the four results you provide should be `True` or `False` with the proper capitalization.

False False True False

Правильно

3. A common error for beginning programmers is to confuse the behavior of `print` statements and `return` statements. 1 / 1 балл

- `print` statements can appear anywhere in your program and print a specified value(s) in the console. Note that execution of your Python program continues onward to the following statement. Remember that executing a `print` statement inside a function definition does not return a value from the function.
- `return` statements appear inside functions. The value associated with the `return` statement is substituted for the expression that called the function. Note that executing a `return` statement terminates execution of the function definition immediately. Any statements in the function definition following the `return` statement are ignored. Execution of your Python code resumes with the execution of the statement after the function call.

As an example to illustrate these points, consider the following piece of code:

```
6   print do_stuff()
```

Note that this code calls the function `do_stuff` in the last `print` statement. The definition of `do_stuff` includes two `print` statements and one `return` statement.

Which of the following is the console output that results from executing this piece of code? While it is trivial to solve this question by cutting and pasting this code into CodeSkulptor, we suggest that you first attempt this problem by attempting to execute this code in your mind.

- (●)
```
1   Hello world
2   Is it over yet?
```
- ( )
```
1   Hello world
2   Is it over yet?
3   Goodbye cruel world!
```
- ( )
```
1   Hello world
```
- ( )
```
1   Hello world
2   Is it over yet?
3   Goodbye cruel world!
4   Is it over yet?
```

✓ Правильно

4. Given a non-negative integer `n`, which of the following expressions computes the ten's digit of `n`? For example, if `n` is 123, then we want the expression to evaluate to 2. **0 / 1 балл**

Think about each expression mathematically, but also try each in CodeSkulptor.

- [x] `(n % 10) / 10`

  Этот вариант не должен быть выбран
  This expression does not compute the ten's digit correctly. Remember, try the expression in CodeSkulptor.

- [ ] `(n % 100 - n % 10) / 10`
- [x] `(n // 10) % 10`

  Правильно
  This expression computes the ten's digit correctly.

5. The function calls `random.randint(0, 10)` and `random.randrange(0, 10)` generate random numbers in different ranges. What number can be generated by one of these functions, but not the other? **1 / 1 балл**

(Refer to the CodeSkulptor documentation.)

By the way, we (and most Python programmers) always prefer to use `random.randrange()` since it handles numerical ranges in a way that is more consistent with the rest of Python.

10

Правильно

6. Implement the mathematical function $f(x) = -5x^5 + 69x^2 - 47$ as a Python function. Then use Python to compute the function values $f(0)$, $f(1)$, $f(2)$, and $f(3)$. Enter the maximum of these four values calculated. **1 / 1 балл**

69

Правильно

7. When investing money, an important concept to know is compound interest. 1 / 1 балл

The equation $FV = PV(1 + rate)^{periods}$ relates the following four quantities.

- The *present value* (*PV*) of your money is how much money you have now.
- The *future value* (*FV*) of your money is how much money you will have in the future.
- The *nominal interest rate per period* (*rate*) is how much interest you earn during a particular length of time, **before** accounting for compounding. This is typically expressed as a percentage.
- The *number of periods* (*periods*) is how many periods in the future this calculation is for.

Finish the following code, run it, and submit the printed number. Provide at least four digits of precision after the decimal point.

```
def future_value(present_value, annual_rate, periods_per_year, years):
    rate_per_period = annual_rate / periods_per_year
    periods = periods_per_year * years

    # Put your code here.

print "$1000 at 2% compounded daily for 3 years yields $", future_value(1000, .02, 365, 3
```

Before submitting your answer, test your function on the following example.

`future_value(500, .04, 10, 10)` should return 745.317442824

1061.83480113

Правильно
Correct.

8. There are several ways to calculate the area of a regular polygon. Given the number of sides, n, and the length of each side, s, the polygon's area is 1 / 1 балл

$$\frac{ns^2}{4\tan(\frac{\pi}{n})}$$

For example, a regular polygon with 5 sides, each of length 7 inches, has area 84.3033926289 square inches.

Write a function that calculates the area of a regular polygon, given the number of sides and length of each side. Submit the area of a regular polygon with 7 sides each of length 3 inches. Enter a number (and not the units) with at least four digits of precision after the decimal point.

Note that the use of inches as the unit of measurement in these examples is arbitrary. Python only keeps track of the numerical values, not the units.

32.705211996

Правильно
Correct.

9. Running the following program results in the error

1 / 1 балл

```
SyntaxError: bad input on line 8 ('return').
```

Which of the following describes the problem?

```
1  def max_of_2(a, b):
2      if a > b:
3          return a
4      else:
5          return b
6
7  def max_of_3(a, b, c):
8  return max_of_2(a, max_of_2(b, c))
```

- ○ Missing colon
- ○ Misspelled function name
- ○ Misspelled variable name
- ○ Extra parenthesis
- ○ Misspelled keyword
- ○ Missing parenthesis
- ○ Wrong number of arguments in function call
- ◉ Incorrect indentation

✓ **Правильно**

Correct. The body of the function definition for `max_of_3()` should be indented, but it is not.

10. The following code has a number of syntactic errors in it. The intended math calculations are correct, so the only errors are syntactic. Fix the syntactic errors.

1 / 1 балл

Once the code has been fully corrected, it should print out two numbers. The first should be 1.09888451159. Submit the **second** number printed in CodeSkulptor. Provide at least four digits of precision after the decimal point.

```
1  define project_to_distance(point_x point_y distance):
2      dist_to_origin = math.square_root(pointx ** 2 + pointy ** 2)
3      scale == distance / dist_to_origin
4      print point_x * scale, point_y * scale
5
6  project-to-distance(2, 7, 4)
```

3.84609579056

✓ **Правильно**

Correct.