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Programming Languages In Practice Part II C++

Practice 2

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Task 1
Calculator

Write a program which will be a simple calculator: +, -, *, /. Load two real numbers and perform actions for them.

Task 2
Area of a circle

Write a program that calculates an area of circle. Load the radius of the circle (r) and display result on the screen. To use the PI number, use M_PI statement and add directives before main function:

```
#define _USE_MATH_DEFINES
#include<cmath>
```

Equation to calcute the area of a cricle:

$$A = \pi r^2$$

Task 3
Diagonal of a square

Write a program to calculate the diagonal of a square. Enter a length of one side (**a**) and use sqrt() function to calculate square root of 2. Add a cmath library to preprocesor directives.

```
#include<cmath>
```

Equation:

$$d = a\sqrt{2}$$

Task 4
Trigonometric functions

Write a program to calculate sinus and consinus of an angle enetered by the user. The angel should be enetered in degrees. Change degrees to radians. Use sin() and cos() functions. Remeber to include cmath library.

$$n° = \frac{n \cdot \pi}{180}$$

For example:

$$\sin 30° = \sin\frac{\pi}{6} = \frac{1}{2} = 0.5$$

$$\cos 30° = \cos\frac{\pi}{6} = \frac{\sqrt{3}}{2} = 0.866$$

Task 5
De Morgan's laws

Write a program to verify the de Morgan's laws for two integer numbers enetered by a user.

Equations:

$$!(p \;\&\&\; q) == !p \;||\; !q$$

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