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Лабораторная работа №1

Название: Решение квадратного уравнения.

Текст программы:

```
import sys
def eq(a, b, c):
  D= b**2 - 4*a*c
  if D < 0:
    return []
  elif D == 0:
    y = -b / (2 * a)
    return [y ** 0.5, y ** 0.5]
  else:
    y1 = (-b + D**0.5) / (2 * a) ; y2 = (-b - D**0.5) / (2 * a)
    if y1 >= 0:
      x1 = y1**0.5 ; x2 = -y1**0.5
    else: x1 = x2 = False
    if y2 >= 0:
      x3 = y2**0.5 ; x4 = -y2**0.5
    else: x3 = x4 = False
    return [x for x in [x1, x2, x3, x4] if x is not False]
if __name__ == "__main__":
  if len(sys.argv) == 4:
    a, b, c = sys.argv[1:]
```

```
  if all(x.replace("-", "").isdigit() for x in [a, b, c]):
    a = float(a);   b = float(b); c = float(c)
  else:
    print("Invalid input. Try again.")
    a = b = c = False
else:
  a = b = c = False
while a is False:
  a = input("A: ")
  if a.replace("-", "").isdigit():
    a = float(a)
    if a == 0:
      print("If A is equal to zero then it is not a biquadratic equation. Try again.")
      a = False
  else:
    print("Invalid input. Try again.")
while b is False:
  b = input("B: ")
  if b.isnumeric():
    b = float(b)
  else:
    print("Invalid input. Try again.")
while c is False:
  c = input("C: ")
  if c.isnumeric():
```

```
      c = float(c)
    else:
      print("Invalid input. Try again.")
  r = eq(a, b, c)
  if r:
    print("Real roots:", *r)
  else:
    print("No real roots.")
```

Результат работы прораммы:

A: 12345678

B: 980

C: 7886

No real roots.

A: 4

B: 4

C: 1

Real roots: (4.329780281177467e-17+0.7071067811865476j) (4.329780281177467e-17+0.7071067811865476j)

A: fghjkl

Invalid input. Try again.

B:

Invalid input. Try again.

C: