Class 2 - Find the Torsional Angle

68/115 challenges solved

Rank: 56959 | Points: 1095

Your Class 2 - Find the Torsional Angle submission got 20.00 points. Share Post

Try the next challenge

Problem Submissions Leaderboard Editorial

You are given four points A, B, C and D in a 3-dimensional Cartesian coordinate system. You are required to print the angle between the plane made by the points A, B, C and B, C, D in degrees(**not radians**). Let the angle be PHI.

$Cos(PHI) = (X.Y)/|X||Y|$ where $X = AB$ x BC and $Y = BC$ x CD.

Here, $X.Y$ means the dot product of X and Y, and AB x BC means the cross product of vectors AB and BC. Also, $AB = B - A$.

Input Format

One line of input containing the space separated floating number values of the X, Y and Z coordinates of a point.

Output Format

Output the angle correct up to two decimal places.

Sample Input

```
0 4 5
1 7 6
0 5 9
1 7 2
```

Sample Output

```
8.19
```

Change Theme Language Python 3

```
1   import math
2
3   class Points(object):
4       def __init__(self, x, y, z):
5           self.x = x
6           self.y = y
7           self.z = z
8
9       def __sub__(self, no):
10          return Points(self.x-no.x, self.y-no.y, self.z-no.z)
11
12      def dot(self, no):
13          return self.x*no.x + self.y*no.y + self.z*no.z
14
15      def cross(self, no):
16          return Points(self.y*no.z - self.z*no.y,
```

```
                      self.z*no.x - self.x*no.z,
                      self.x*no.y - self.y*no.x)

    def absolute(self):
        return pow((self.x ** 2 + self.y ** 2 + self.z ** 2), 0.5)
if __name__ == '__main__':…
```

EMACS Line: 1 Col: 1

Upload Code as File | Test against custom input | Run Code | Submit Code

You have earned 20.00 points!

68/115 challenges solved.

59%

Congratulations

You solved this challenge. Would you like to challenge your friends?

Next Challenge

- Test case 0
- Test case 1
- Test case 2
- Test case 3
- Test case 4
- Test case 5
- Test case 6

Compiler Message

Success

Input (stdin) Download

```
0 4 5
1 7 6
0 5 9
1 7 2
```

Expected Output Download

```
8.19
```