Cheatography

Python Basics - Math Cheat Sheet

by Mario (mariofreitas) via cheatography.com/42813/cs/13208/

Math Operations

```
a = 3
b = 4
```

`a + b`	Sum *a* and *b* (7)
`a - b`	Subtract *b* from *a* (-1)
`a * b`	*a* times *b* (12)
`a / b`	*a* divided by *b* (0.75)
`a // b`	Integer part of *a* divided by *b* (0)
`a % b`	Rest of *a* divided by *b* (3)
`a ** b`	*a* to the power of *b* (81)

Logic Tests

`5 > 3`	Tests if 5 is greater than 3 (True)
`5 >= 3`	Tests if 5 is greater than or equal to 3 (True)
`5 == 3`	Tests if 5 is equal to 3 (False)
`5 != 3`	Tests if 5 is different than 3 (True)
`5 <= 3`	Tests if 5 is lower than or equal to 3 (False)
`5 < 3`	Tests if 5 is lower than 3 (False)
`not True`	Opposite of True (False)

Math Module

`import math`	Imports module *math*
`math.ceil(x)`	Rounds *x* up
`math.floor(x)`	Rounds *x* down
`round(x)`[1]	Rounds *x* with 0 decimal places
`round(x, 2)`	Rounds *x* with 2 decimal places
`math.sqrt(x)`	Square root of *x*
`math.sin(angle)`	Sine of *angle*
`math.cos(angle)`	Cosine of *angle*
`math.tan(angle)`	Tangent of *angle*
`math.sinh(x)`	Hiperbolic sine of *x*
`math.cosh(x)`	Hiperbolic cosine of *x*
`math.tanh(x)`	Hiperbolic tangent of *x*
`math.asin(angle)`	Arc sine of *angle*
`math.acos(angle)`	Arc cosine of *angle*

Math Module (cont)

`math.atan(angle)`	Arc tangent of *angle*
`math.asinh(x)`	Inverse hiperbolic sine of *x*
`math.acosh(x)`	Inverse hiperbolic cosine of *x*
`math.atanh(x)`	Inverse hiperbolic tangent of *x*
`math.degrees(angle)`	Covert *rad_angle* from radians to degrees
`math.radians(angle)`	Covert *rad_angle* from degrees to radians
`math.factorial(x)`	Factorial of *x*
`math.gamma(x)`	Gamma function of *x*
`math.exp(x)`	*e* to the power of *x*
`math.log(x)`	Natural logarithm of *x*
`math.log(x, 2)`	Base 2 logarithm of *x*
`math.e`	Constant *e*
`math.pi`	Constant *pi*

[1] round is not part of the *math* module

[2] the python standard is to work with angles in radians

Second Degree Equation Roots

```
# This script solves ax^2 + bx + c = 0
import math
a = 1
b = -1
c = -6
delta = b**2 - 4*a*c
r1 = (-b + math.sqrt(delta))/(2*a)
r2 = (-b - math.sqrt(delta))/(2*a)
print(f"r1 = {r1}")
print(f"r2 = {r2}")
```

r1 = 3.0
r2 = -2.0

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Not published yet.
Last updated 22nd October, 2017.

Triangle Angles

```
# Calculates the angles of a triangle based on its
sides.
import math
side1, side2, side3 = 3, 4, 5
angle1 = math.atan(side2/side1)
angle2 = math.acos(side2/side3)
print(f"angle 1 = {math.degrees(angle1)}")
print(f"angle 2 = {math.degrees(angle2)}")
```

```
angle 1 = 53.13010235415598
angle 2 = 36.86989764584401
```

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