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# NumPy Hyperbolic Functions

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# **Hyperbolic Functions**

NumPy provides the ufuncs sinh(), cosh() and tanh() that take values in radians and produce the corresponding sinh, cosh and tanh values..

## Example

Find sinh value of PI/2:

```
import numpy as np
x = np.sinh(np.pi/2)
print(x)
```

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# Example

Find cosh values for all of the values in arr:

```
import numpy as np
arr = np.array([np.pi/2, np.pi/3, np.pi/4, np.pi/5])
x = np.cosh(arr)
```



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# **Finding Angles**

Finding angles from values of hyperbolic sine, cos, tan. E.g. sinh, cosh and tanh inverse (arcsinh, arccosh, arctanh).

Numpy provides ufuncs arcsinh(), arccosh() and arctanh() that produce radian values for corresponding sinh, cosh and tanh values given.

## Example

Find the angle of 1.0:

```
import numpy as np
x = np.arcsinh(1.0)
print(x)
```

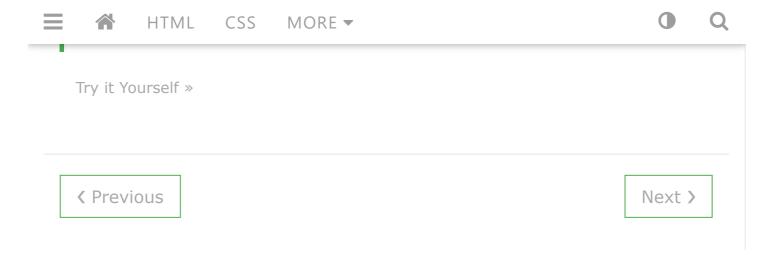
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# Angles of Each Value in Arrays

## Example

Find the angle for all of the tanh values in array:

```
import numpy as np
```



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