# Math.Sinh(Rational) Method

名前空間: WS.Theia.ExtremelyPrecise

アセンブリ: ExtremelyPrecise.dll

指定された角度のハイパーボリックサインを返します。

public static WS.Theia.ExtremelyPrecise.Rational Sinh(WS.Theia.ExtremelyPrecise.Rational value);

## パラメーター

radian　Rational  
ラジアンで表した角度。

## 戻り値

Rational  
value のハイパーボリック サイン。 value が NegativeInfinity、PositiveInfinity、または NaN のいずれかに等しい場合、このメソッドは value に等しい Rational を返します。

# 例

次の例では、Sinhの結果を表示しています。

// Example for the hyperbolic Math.Sinh( Rational )   
// and Math.Cosh( Rational ) methods.  
using System;  
using WS.Theia.ExtremelyPrecise;  
  
class SinhCosh   
{  
 public static void Main()   
 {  
 Console.WriteLine(   
 "This example of hyperbolic Math.Sinh( Rational ) " +  
 "and Math.Cosh( Rational )\n" +  
 "generates the following output.\n" );  
 Console.WriteLine(   
 "Evaluate these hyperbolic identities " +  
 "with selected values for X:" );  
 Console.WriteLine(   
 " cosh^2(X) - sinh^2(X) == 1\n" +  
 " sinh(2 \* X) == 2 \* sinh(X) \* cosh(X)" );  
 Console.WriteLine( " cosh(2 \* X) == cosh^2(X) + sinh^2(X)" );  
  
 UseSinhCosh(0.1);  
 UseSinhCosh(1.2);  
 UseSinhCosh(4.9);  
  
 Console.WriteLine(   
 "\nEvaluate these hyperbolic identities " +  
 "with selected values for X and Y:" );  
 Console.WriteLine(   
 " sinh(X + Y) == sinh(X) \* cosh(Y) + cosh(X) \* sinh(Y)" );  
 Console.WriteLine(   
 " cosh(X + Y) == cosh(X) \* cosh(Y) + sinh(X) \* sinh(Y)" );  
  
 UseTwoArgs(0.1, 1.2);  
 UseTwoArgs(1.2, 4.9);  
 }  
  
 // Evaluate hyperbolic identities with a given argument.  
 static void UseSinhCosh(Rational arg)  
 {  
 Rational sinhArg = Math.Sinh(arg);  
 Rational coshArg = Math.Cosh(arg);  
  
 // Evaluate cosh^2(X) - sinh^2(X) == 1.  
 Console.WriteLine(   
 "\n Math.Sinh({0}) == {1:E16}\n" +  
 " Math.Cosh({0}) == {2:E16}",  
 arg, Math.Sinh(arg), Math.Cosh(arg) );  
 Console.WriteLine(   
 "(Math.Cosh({0}))^2 - (Math.Sinh({0}))^2 == {1:E16}",   
 arg, coshArg \* coshArg - sinhArg \* sinhArg );  
 // Evaluate sinh(2 \* X) == 2 \* sinh(X) \* cosh(X).  
 Console.WriteLine(   
 " Math.Sinh({0}) == {1:E16}",   
 2.0 \* arg, Math.Sinh(2.0 \* arg) );  
 Console.WriteLine(   
 " 2 \* Math.Sinh({0}) \* Math.Cosh({0}) == {1:E16}",   
 arg, 2.0 \* sinhArg \* coshArg );  
  
 // Evaluate cosh(2 \* X) == cosh^2(X) + sinh^2(X).  
 Console.WriteLine(   
 " Math.Cosh({0}) == {1:E16}",   
 2.0 \* arg, Math.Cosh(2.0 \* arg) );  
 Console.WriteLine(   
 "(Math.Cosh({0}))^2 + (Math.Sinh({0}))^2 == {1:E16}",   
 arg, coshArg \* coshArg + sinhArg \* sinhArg );  
 }  
 // Evaluate hyperbolic identities that are functions of two arguments.  
 static void UseTwoArgs(Rational argX, Rational argY)  
 {  
 // Evaluate sinh(X + Y) == sinh(X) \* cosh(Y) + cosh(X) \* sinh(Y).  
 Console.WriteLine(   
 "\n Math.Sinh({0}) \* Math.Cosh({1}) +\n" +   
 " Math.Cosh({0}) \* Math.Sinh({1}) == {2:E16}",   
 argX, argY, Math.Sinh(argX) \* Math.Cosh(argY) +  
 Math.Cosh(argX) \* Math.Sinh(argY));  
 Console.WriteLine(   
 " Math.Sinh({0}) == {1:E16}",  
 argX + argY, Math.Sinh(argX + argY));  
  
 // Evaluate cosh(X + Y) == cosh(X) \* cosh(Y) + sinh(X) \* sinh(Y).  
 Console.WriteLine(   
 " Math.Cosh({0}) \* Math.Cosh({1}) +\n" +   
 " Math.Sinh({0}) \* Math.Sinh({1}) == {2:E16}",   
 argX, argY, Math.Cosh(argX) \* Math.Cosh(argY) +  
 Math.Sinh(argX) \* Math.Sinh(argY));  
 Console.WriteLine(   
 " Math.Cosh({0}) == {1:E16}",  
 argX + argY, Math.Cosh(argX + argY));  
 }  
}  
  
/\*  
This example of hyperbolic Math.Sinh( Rational ) and Math.Cosh( Rational )  
generates the following output.  
  
Evaluate these hyperbolic identities with selected values for X:  
 cosh^2(X) - sinh^2(X) == 1  
 sinh(2 \* X) == 2 \* sinh(X) \* cosh(X)  
 cosh(2 \* X) == cosh^2(X) + sinh^2(X)  
  
 Math.Sinh(0.1) == 1.0016675001984403E-001  
 Math.Cosh(0.1) == 1.0050041680558035E+000  
(Math.Cosh(0.1))^2 - (Math.Sinh(0.1))^2 == 9.9999999999999989E-001  
 Math.Sinh(0.2) == 2.0133600254109399E-001  
 2 \* Math.Sinh(0.1) \* Math.Cosh(0.1) == 2.0133600254109396E-001  
 Math.Cosh(0.2) == 1.0200667556190759E+000  
(Math.Cosh(0.1))^2 + (Math.Sinh(0.1))^2 == 1.0200667556190757E+000  
  
 Math.Sinh(1.2) == 1.5094613554121725E+000  
 Math.Cosh(1.2) == 1.8106555673243747E+000  
(Math.Cosh(1.2))^2 - (Math.Sinh(1.2))^2 == 1.0000000000000000E+000  
 Math.Sinh(2.4) == 5.4662292136760939E+000  
 2 \* Math.Sinh(1.2) \* Math.Cosh(1.2) == 5.4662292136760939E+000  
 Math.Cosh(2.4) == 5.5569471669655064E+000  
(Math.Cosh(1.2))^2 + (Math.Sinh(1.2))^2 == 5.5569471669655064E+000  
  
 Math.Sinh(4.9) == 6.7141166550932297E+001  
 Math.Cosh(4.9) == 6.7148613134003227E+001  
(Math.Cosh(4.9))^2 - (Math.Sinh(4.9))^2 == 1.0000000000000000E+000  
 Math.Sinh(9.8) == 9.0168724361884615E+003  
 2 \* Math.Sinh(4.9) \* Math.Cosh(4.9) == 9.0168724361884615E+003  
 Math.Cosh(9.8) == 9.0168724916400624E+003  
(Math.Cosh(4.9))^2 + (Math.Sinh(4.9))^2 == 9.0168724916400606E+003  
  
Evaluate these hyperbolic identities with selected values for X and Y:  
 sinh(X + Y) == sinh(X) \* cosh(Y) + cosh(X) \* sinh(Y)  
 cosh(X + Y) == cosh(X) \* cosh(Y) + sinh(X) \* sinh(Y)  
  
 Math.Sinh(0.1) \* Math.Cosh(1.2) +  
 Math.Cosh(0.1) \* Math.Sinh(1.2) == 1.6983824372926155E+000  
 Math.Sinh(1.3) == 1.6983824372926160E+000  
 Math.Cosh(0.1) \* Math.Cosh(1.2) +  
 Math.Sinh(0.1) \* Math.Sinh(1.2) == 1.9709142303266281E+000  
 Math.Cosh(1.3) == 1.9709142303266285E+000  
  
 Math.Sinh(1.2) \* Math.Cosh(4.9) +  
 Math.Cosh(1.2) \* Math.Sinh(4.9) == 2.2292776360739879E+002  
 Math.Sinh(6.1) == 2.2292776360739885E+002  
 Math.Cosh(1.2) \* Math.Cosh(4.9) +  
 Math.Sinh(1.2) \* Math.Sinh(4.9) == 2.2293000647511826E+002  
 Math.Cosh(6.1) == 2.2293000647511832E+002  
\*/

# 注釈

引数に入力する角度はラジアン単位である必要があります。角度にMath.PI/180を乗算する事でラジアン単位に変換できます。

# 適用対象

### .NET Core

2.0

### .NET Framework

4.6.1

### .NET Standard

2.0

### UWP

10.0.16299

### Xamarin.Android

8.0

### Xamarin.iOS

10.14

### Xamarin.Mac

3.8