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.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