

# HP Calculators - Mathematical Questions

## [Overview](#)

[Calculator Symbol Key](#)

[Wrong number for NVP](#)

[Calculating the 4th and 5th root of a number](#)

[Calculating sin \(or tangent\) of pi Radians Displays Number Other than 0](#)

[Calculating the sine of pi Results in 'sin \(pi\)' Rather than 0](#)

[Converting units \(49g\)](#)

[Calculator gives incorrect or unexpected results when using trigonometric functions](#)

[When  \$\(-1\)^{2/3}\$  is computed the calculator gives a complex number instead of 1 \(48g series\)](#)

[Taking the log of a base other than 10 \(38g\)](#)

[IRR/ YR is larger than expected \(10bii\)](#)





[Some variables used earlier cannot be found \(48g series\)](#)







## Overview

This document addresses mathematical questions for the HP 10b, 10bii, 12c, 17bii, 19bii, 20s, 32sii, 38g, 48gx, 48g+, and 49g calculators.

## Calculator Symbol Key

The procedures in this document use the following text to represent symbol keys:

Key	Description	Text representation
	Right shift key	RS
	Left-shift key	LS
	colored key; shift key	SHIFT
	Move cursor left	cursor-left

Key	Description	Text representation
	Move cursor right	cursor-right
	Move cursor up	cursor-up
	Move cursor down	cursor-down
	Backspace/clear	backspace
	Symbol for pi	pi
	x root of y	xROOTy

## Wrong number for NVP

### HP 12c, 17bii, and 19bii

Make sure that the discount rate entered is periodic. The number of periods per year cannot be set in a cash flow, so the annual rate needs to be divided by the number of periods per year (four quarterly, two for semi-annual, and so on).

### HP 10b

Make sure that the discount rate that was entered is annualized by multiplying the periodic rate by the number of periods per year (four quarterly, two for semi-annual, and so on).

## Calculating the 4th and 5th root of a number

### HP 10b

To calculate the 4th root of 81:

1. Press **81**, **SHIFT**, then  $y^x$
2. Press **SHIFT**, **[ ( ]**, then **4**
3. Press **SHIFT**, **1/x**, **SHIFT**, then **[ ) ]**
4. Press the = sign
5. Answer = 3

## HP 12c

To calculate the 4th root of 81:

1. Press **81**, then **ENTER**
2. Press **4**, **[1/x]**, then **[y^x]**
3. Answer = 3

## HP 17bii

To calculate the 4th root of 81:

In Algebraic mode:

1. Press **81**, **SHIFT**, then  $[y^x]$
2. Press **4**, **SHIFT**,  $[1/x]$
3. Press **INPUT** or the = sign
4. Answer = 3

In RPN mode:

1. Press **81**, then **INPUT**
2. Press **4**, **SHIFT**,  $[1/x]$ , **SHIFT**, then  $[y^x]$
3. Answer = 3

## HP 19bii

To calculate the 4th root of 81:

In Algebraic mode:

1. Press **81**, **SHIFT**, then  $[^]$
2. Press **4**, **SHIFT**,  $[1/x]$
3. Press **INPUT** or the = sign
4. Answer = 3

In RPN mode:

1. Press **81**, then **INPUT**
2. Press **4**, **SHIFT**, [**1/x**], **SHIFT**, then [**^**]
3. Answer = 3

## Calculating sin (or tangent) of pi Radians Displays Number Other than 0

### HP 20s, 32sii, and 19bii

$\pi$  cannot be represented exactly with the 12-digit precision of the calculator.

### HP 38g

The calculator may not be in the radians mode. If the RAD annunciator is not displayed in the upper left corner of the screen, change the angle mode. Regardless, the HP 38g, like all calculators, can compute using only a finite number of decimal places. Any result involving  $\pi$  that contains an infinite number of decimal places must be truncated. In this case the rounded number differs from the theoretical answer by one part in  $10E 12$ .

### HP 49g

The HP 49g must be in the radians mode since  $\sin(3.1415 \text{ degrees})$  is not zero. If the RAD annunciator does not appear at the top left of the display, press the **MODE** key, and change the angle measure of the radians. Next, press **CAS** and clear (that is un-check) the NUMERIC and APPROX fields. If this is not done, the 49g will assume that a numeric calculation is wanted, which for an irrational number like  $\pi$  will always be an approximation if represented in a finite number of decimal places.

## Calculating the sine of pi Results in 'sin (pi)' Rather than 0

### HP 48gx/48g+

There are two possibilities.

1. The calculator might not be in the RADIANS mode. if the RAD annunciator is not active at the top left hand corner of the display, press **LS**, then **RAD**.
2. The HP 48gx and 48g+, like all calculators, can compute using only a finite number of decimal places. Because  $\text{SIN}(\pi)$  contains an infinite number of decimal places, it must be truncated to twelve decimal places. To get zero,

make sure that flag -2 is clear (press **2**, **[+/-]**, **LS**, **MODES**, **FLAG**, then **CF**) and use **EVAL**.

## Converting units (49g)

With the 49g in Algebraic mode, use **CONVERT** (via **cursor-right**, **UNITS**, **Tools**) with two arguments: the current value (with its unit), then a **1** with the target unit. (To avoid implying multiplication, type the underscore, **\_**, between value and unit.) For example, to convert 100 meters to yards, use **CONVERT (100\_m, 1\_yd)** .

In RPN mode, the syntax is **100\_m 1\_yd CONVERT**. (Or, if flag -117 is set, use a menu shortcut: **100\_m cursor-left, yd**.)

## Calculator gives incorrect or unexpected results when using trigonometric functions

### HP 19bii

Make sure the calculator is in the correct trigonometric mode. The trigonometric functions and polar/rectangular coordinated conversions involve angles that can be interpreted either as degrees or radians, depending on the current trigonometric mode. the (2pi) annunciator indicates RADIANS mode.

### Changing the trigonometric mode:

To change the trigonometric mode:

1. Press **SHIFT**, then **MODES**
2. Press **D/R** and check for the absence of the radians annunciator.
3. Press **EXIT** to return to the menu that was previously being viewed.

### Trigonometric functions

Pressing **TRIG** displays a menu of trigonometric functions. Angles are interpreted in degrees or radian, depending on the trigonometric mode. The following table contains a list of the trigonometric functions for the HP 19bii and the keys associated with those functions.

Key(s)	Function	Key(s)	Function
SIN	Sine	ASIN	Arc sine
COS	Cosine	ACOS	Arc cosine
TAN	Tangent	ATAN	Arc tangent

## HP 20s

Make sure the calculator is in the correct trigonometric mode. The following is a list of the trigonometric modes for the HP 20s and their keypad shortcuts.

- Degrees mode: Press **RS**, then **DEG**
- Radians mode: Press **RS**, then **RAD**
- Grads mode: press **RS**, then **GRAD**

## HP 32si

Make sure the calculator is using the correct angular mode. The following is a list of the trigonometric modes for the HP 32sii and their keypad shortcuts.

- Degrees mode: Press **LS**, **MODES**, then **DG**
- Radians mode: Press **LS**, **MODES**, then **RD**
- Grads mode: Press **LS**, **MODES**, then **GR**

## HP 38g

The angle mode may be wrong for the particular problem. Check the angle mode annunciator in the upper left corner of the display screen (DEG means degrees, RAD means radians, and GRD means grads). To change the angle mode:

1. Press the **SHIFT** key, then **MODES**
2. While highlighting the "ANGLE MEASURE" field, press the **CHOOS** menu key.
3. Highlight the desired mode, and then press the **OK** menu key.

## HP 48gx/48g+

The angle mode may be wrong for the particular problem. Check the angle mode annunciator (RAD means radians, GRAD means grads, and NONE means degrees). Press **LS**, then **RAD** or use the **RS, MODES** screen to change the angle mode.

## When $(-1)^{2/3}$ is computed the calculator gives a complex number instead of 1 (48g series)

The HP 48g is designed to return the complex principle solution for any fractional exponent. To get the real number root, compute the radicand first ( $-1^2$ ) using the **x^2** key then compute the cube root using the **xROOTy** key. An algebraic object such as 'XROOT (3  $(-1)^2$ )' can be used as well. Once the algebraic object has been entered, press  **EVAL**  to calculate the answer.

## Taking the log of a base other than 10 (38g)

To take the log of a base other than 10 use the following formula: if  $Y = \text{LOG}_x(Z)$ , then  $Y = \text{LOG}_{10}(Z) / \text{LOG}_{10}(X)$ . For example, the  $\text{LOG}_2(8)$  is  $\text{LOG}_{10}(8)$  divided by  $\text{LOG}_{10}(2)$ , which is 3. The same formula applies to natural logarithms.

## IRR/ YR is larger than expected (10bii)

This is IRR per year. To see a periodic IRR, divide IRR/YR by P/ YR.

## Some variables used earlier cannot be found (48g series)

Variables in a different directory may have been used. Check all the directories in the calculator.