

**mathtrans**

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# Chapter 1

## mathtrans

### 1.1 mathtrans.doc

```
SPAcos ()
SPAsin ()
SPAtan ()
SPCos ()
SPCosh ()
SPExp ()
SPFieee ()
SPLog ()
SPLog10 ()
SPPow ()
SPSin ()
SPSincos ()
SPSinh ()
SPSqrt ()
SPTan ()
SPTanh ()
SPTieee ()
```

### 1.2 mathtrans.library/SPAcos

#### NAME

SPAcos - obtain the arccosine of the floating point number

#### SYNOPSIS

```
fnum2 = SPAcos(fnum1);
                                d0.1
float fnum2;
float fnum1;
```

#### FUNCTION

Accepts a floating point number representing the cosine of an angle and returns the value of said angle in

radians

#### INPUTS

fnum1 - Motorola fast floating point number

#### RESULT

fnum2 - Motorola fast floating point number

#### BUGS

None

#### SEE ALSO

SPSin

## 1.3 mathtrans.library/SPAsin

#### NAME

SPAsin - obtain the arcsine of the floating point number

#### SYNOPSIS

```
fnum2 = SPAsin(fnum1);  
                                d0.l  
float fnum2;  
float fnum1;
```

#### FUNCTION

Accepts a floating point number representing the sine of an angle and returns the value of said angle in radians

#### INPUTS

fnum1 - Motorola fast floating point number

#### RESULT

fnum2 - Motorola fast floating point number

#### BUGS

None

#### SEE ALSO

SPCos

---

## 1.4 mathtrans.library/SPAtan

### NAME

SPAtan - obtain the arctangent of the floating point number

### SYNOPSIS

```
fnum2 = SPAtan(fnum1);  
                                d0.1  
float fnum2;  
float fnum1;
```

### FUNCTION

Accepts a floating point number representing the tangent of an angle and returns the value of said angle in radians

### INPUTS

fnum1 - Motorola fast floating point number

### RESULT

fnum2 - Motorola fast floating point number

### BUGS

None

### SEE ALSO

SPTan

## 1.5 mathtrans.library/SPCos

### NAME

SPCos - obtain the cosine of the floating point number

### SYNOPSIS

```
fnum2 = SPCos(fnum1);  
                                d0.1  
float fnum2;  
float fnum1;
```

### FUNCTION

Accepts a floating point number representing an angle in radians and returns the cosine of said angle.

### INPUTS

---

fnum1 - Motorola fast floating point number

#### RESULT

fnum2 - Motorola fast floating point number

#### BUGS

None

#### SEE ALSO

SPAcos

## 1.6 mathtrans.library/SPCosh

#### NAME

SPCosh - obtain the hyperbolic cosine of the floating point number

#### SYNOPSIS

```
fnum2 = SPCosh(fnum1);  
                                d0.l  
float fnum2;  
float fnum1;
```

#### FUNCTION

Accepts a floating point number representing an angle in radians and returns the hyperbolic cosine of said angle.

#### INPUTS

fnum1 - Motorola fast floating point number

#### RESULT

fnum2 - Motorola fast floating point number

#### BUGS

None

#### SEE ALSO

SPSinh

## 1.7 mathtrans.library/SPExp

---

## NAME

SPExp - obtain the exponential ( $e^{**X}$ ) of the floating point number

## SYNOPSIS

```
fnum2 = SPExp(fnum1);  
                                d0.l  
float fnum2;  
float fnum1;
```

## FUNCTION

Accepts a floating point number and returns the value of e raised to the fnum1 power

## INPUTS

fnum1 - Motorola fast floating point number

## RESULT

fnum2 - Motorola fast floating point number

## BUGS

None

## SEE ALSO

SPLog

## 1.8 mathtrans.library/SPFieee

## NAME

SPFieee - convert single precision ieee to FFP number

## SYNOPSIS

```
fnum = SPFieee(ieeenum);  
                                d0.l  
float fnum;  
float ieeenum;
```

## FUNCTION

Accepts a standard single precision format  
returns the same number, converted to Motorola  
fast floating point number

## INPUTS

ieeenum - IEEE Single Precision Floating Point

---



## RESULT

fnum - Motorola fast floating point number

## BUGS

None

## SEE ALSO

SPTieee

## 1.9 mathtrans.library/SPLog

## NAME

SPLog - obtain the natural logarithm of the floating point number

## SYNOPSIS

```
fnum2 = SPLog(fnum1);  
                                d0.l  
float fnum2;  
float fnum1;
```

## FUNCTION

Accepts a floating point number and returns the natural logarithm (base e) of said number

## INPUTS

fnum1 - Motorola fast floating point number

## RESULT

fnum2 - Motorola fast floating point number

## BUGS

None

## SEE ALSO

SPExp

## 1.10 mathtrans.library/SPLog10

## NAME

SPLog10 - obtain the naperian logarithm(base 10) of the

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floating point number

#### SYNOPSIS

```
fnum2 = SPLog10(fnum1);  
                                d0.l  
float fnum2;  
float fnum1;
```

#### FUNCTION

Accepts a floating point number and returns the naperian logarithm (base 10) of said number

#### INPUTS

fnum1 - Motorola fast floating point number

#### RESULT

fnum2 - Motorola fast floating point number

#### BUGS

None

#### SEE ALSO

SPExp, SpLog

## 1.11 mathtrans.library/SPPow

#### NAME

SPPow - raise a number to a power

#### SYNOPSIS

```
result = SPPow(fnum1, fnum2);  
                                d1.l    d0.l  
float fnum1, fnum2;  
float result;
```

#### FUNCTION

Accepts two floating point numbers and returns the result of fnum2 raised to the fnum1 power

#### INPUTS

fnum1 - Motorola fast floating point number  
fnum2 - Motorola fast floating point number

#### RESULT

---

result - Motorola fast floating point number

BUGS

None

SEE ALSO

SPExp, SPLog

## 1.12 mathtrans.library/SPSin

NAME

SPSin - obtain the sine of the floating point number

SYNOPSIS

```
fnum2 = SPSin(fnum1);  
                                d0.l  
float fnum2;  
float fnum1;
```

FUNCTION

Accepts a floating point number representing an angle in radians and returns the sine of said angle.

INPUTS

fnum1 - Motorola fast floating point number

RESULT

fnum2 - Motorola fast floating point number

BUGS

None

SEE ALSO

SPAsin

## 1.13 mathtrans.library/SPSincos

NAME

SPSincos - obtain the sine and cosine of a number

SYNOPSIS

---

```
fnum3 = SPSincos(pfnum2, fnum1);  
                                d1.1,    d0.1  
float *pfnum2;  
float fnum1;  
float fnum3;
```

#### FUNCTION

Accepts a floating point number (fnum1) representing an angle in radians and a pointer to another floating point number (pfnum2). It computes the cosine and places it in \*pfnum2. It computes the sine and returns it as a result.

#### INPUTS

fnum1 - Motorola fast floating point number  
pfnum2 - pointer to Motorola fast floating point number

#### RESULT

\*pfnum2 - Motorola fast floating point number (cosine)  
fnum3 - Motorola fast floating point number (sine)

#### BUGS

None

#### SEE ALSO

SPSin, SPCos

## 1.14 mathtrans.library/SPSinh

#### NAME

SPSinh - obtain the hyperbolic sine of the floating point number

#### SYNOPSIS

```
fnum2 = SPSinh(fnum1);  
                                d0.1  
float fnum2;  
float fnum1;
```

#### FUNCTION

Accepts a floating point number representing an angle in radians and returns the hyperbolic sine of said angle.

#### INPUTS

fnum1 - Motorola fast floating point number

#### RESULT

---

fnum2 - Motorola fast floating point number

BUGS

None

SEE ALSO

SPCosh

## 1.15 mathtrans.library/SPSqrt

NAME

SPSqrt - obtain the square root of the floating point number

SYNOPSIS

```
fnum2 = SPSqrt(fnum1);  
                                d0.l  
float fnum2;  
float fnum1;
```

FUNCTION

Accepts a floating point number and returns the square root of said number

INPUTS

fnum1 - Motorola fast floating point number

RESULT

fnum2 - Motorola fast floating point number

BUGS

None

SEE ALSO

SPPow, SPMul

## 1.16 mathtrans.library/SPTan

NAME

SPTan - obtain the tangent of the floating point number

SYNOPSIS

---

```
fnum2 = SPTan(fnum1);  
                                d0.1  
float fnum2;  
float fnum1;
```

#### FUNCTION

Accepts a floating point number representing an angle in radians and returns the tangent of said angle.

#### INPUTS

fnum1 - Motorola fast floating point number

#### RESULT

fnum2 - Motorola fast floating point number

#### BUGS

None

#### SEE ALSO

SPAtan

## 1.17 mathtrans.library/SPTanh

#### NAME

SPTanh - obtain the hyperbolic tangent of the floating point number

#### SYNOPSIS

```
fnum2 = SPTanh(fnum1);  
                                d0.1  
float fnum2;  
float fnum1;
```

#### FUNCTION

Accepts a floating point number representing an angle in radians and returns the hyperbolic tangent of said angle.

#### INPUTS

fnum1 - Motorola fast floating point number

#### RESULT

fnum2 - Motorola fast floating point number

#### BUGS

None

---

SEE ALSO

SPSinh, SPCosh

## 1.18 mathtrans.library/SPTieee

NAME

SPTieee - convert FFP number to single precision ieee

SYNOPSIS

```
ieeenum = SPTieee(fnum);  
                                d0.l  
float ieeenum;  
float fnum;
```

FUNCTION

Accepts a Motorola fast floating point number and  
returns the same number, converted into IEEE  
standard single precision format

INPUTS

fnum - Motorola fast floating point number

RESULT

ieeenum - IEEE Single Precision Floating Point

BUGS

None

SEE ALSO

SPFieee

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