解：(1) using true form one-bit multiply

$[x]_{TF} = 0,010011 \quad [y]_{TF} = 0,110011$

```
   0,000000      110011
 + 0,010011              +[x]TF
 ----------
   0,010011
   0,001001      1 11001
 + 0,010011              →1, +[x]TF
 ----------
   0,011100
   0,001110      01 1100
 + 0,000000              →1, +0
 ----------
   0,001110
   0,000111      001 110
 + 0,000000              →1, +0
 ----------
   0,000111
   0,000011      1001 11
 + 0,010011              →1, +[x]TF
 ----------
   0,010110
   0,001011      01001 1
 + 0,010011              →1, +[x]TF
 ----------
   0,011110
                         →1
   0,001111 0 01001
```

for $0 \oplus 0 = 0$

Thus the result is 0, 00111100 1001

using form two-bit multiply

$2x^* = 0,100110 \quad [-x^*]_{补} = 1,101101$

```
   000,000000    00110011   0
 + 111,101101                  +[-x*]补
 ------------
   111,101101
   111,111011    01 001100  1   →2  +x*
 + 000,010011
 ------------
 ①000,001110
   000,000011    1001 0011  0   →2  +[-x*]补
 + 111,101101
 ------------
   111,110000
   111,111100    001001  00  1  →2, +x*
 + 000,010011
 ------------
 ①000,001111   001001
```

for $0 \oplus 0 = 0$

Thus the result is 0, 00111100 1001

using booth's algorithm

$[x]_补 = 0,010011 \quad [y]_补 = 0,110011 \quad [-x]_补 = 1,101101$

```
   00,000000     01100110
 + 11,101101                +[-x]补
 -----------
   11,101101
   11,110110     1 0110011  →1, →1
   11,111011     01 011001  +[x]补
 + 00,010011
 -----------
 ①00,001110
   00,000111     001 01100  →1, →1
   00,000011     1001 0110  +[-x]补
 + 11,101101
 -----------
   11,110000
   11,111000     01001 011  →1, →1
   11,111100     001001 01  +[x]补
 + 00,010011
 -----------
 ①00,001111     001001
```

Thus $[x \cdot y]_补 = 0,00111100 1001$

So $[x \cdot y]_{TF} = 0,001111001001$

(2) using true form one-bit multiply

$[x]_{TF} = 1.010111$ $\quad [y]_{TF} = 1.011011$

0.000000	011011	
+ 0.010111		$+[x]_{TF}$
0.010111		
0.001011	$\underline{\underline{1}}$ 01101	$\rightarrow 1$, $+[x]_{TF}$
+ 0.010111		
0.100010		
0.010001	$\underline{\underline{01}}$ 0110	$\rightarrow 1$, $+0$
+ 0.000000		
0.010001		
0.001000	$\underline{\underline{101}}$ 011	$\rightarrow 1$, $+[x]_{TF}$
+ 0.010111		
0.011111		
0.001111	$\underline{\underline{1101}}$ 01	$\rightarrow 1$, $+[x]_{TF}$
+ 0.010111		
0.100110		
0.010011	$\underline{\underline{01101}}$ 0	$\rightarrow 1$, $+0$
+ 0.000000		
0.010011		
0.001001	101101	$\rightarrow 1$

for $1 \oplus 1 = 0$

Thus $[x \cdot y]_{TF} = 0.001001101101$

using true form two-bit multiply

$[x^*]_{TF} = 0.010111$ $\quad [2x^*]_{TF} = 0.101110$ $\quad [-x^*]_{2'} = 1.101001$

000.000000	00011011	0	
+ 111.101001			$+[-x^*]_{2'}$
111.101001			
111.111010	$\underline{\underline{01}}$ 000110	1	$\rightarrow 2$ $+[-x^*]_{2'}$
+ 111.101001			
(1)111.100011			
111.111000	$\underline{\underline{1101}}$ 0001	1	$\rightarrow 2$, $+2x^*$
+ 000.101110			
(1)000.100110			
000.001001	$\underline{\underline{101101}}$ 00	0	$\rightarrow 2$ $+0$
+ 000.000000			
000.001001	101101		

for $1 \oplus 1 = 0$

Thus $[x \cdot y]_{TF} = 0.001001101101$

using booth's algorithm

$[x]_{2'} = 1.101001$ $\quad [y]_{2'} = 1.100101$ $\quad [-x]_{2'} = 0.010111$

00.000000	11001010	
+ 00.010111		$+[-x]_{2'}$
00.010111		
00.001011	$\underline{\underline{1}}$ 1100101	$\rightarrow 1$, $+[x]_{2'}$
+ 11.101001		
11.110100		
11.111010	$\underline{\underline{01}}$ 110010	$\rightarrow 1$, $+[-x]_{2'}$
+ 00.010111		
(1)00.010001		
00.001000	$\underline{\underline{101}}$ 11001	$\rightarrow 1$, $+[x]_{2'}$
+ 11.101001		
11.110001		
11.111000	$\underline{\underline{1101}}$ 1100	$\rightarrow 1$, $\rightarrow 1$
11.111100	$\underline{\underline{01101}}$ 110	$+[-x]_{2'}$
+ 00.010111		
(1)00.010011		
00.001001	$\underline{\underline{101101}}$ 11	$\rightarrow 1$, $+0$
+ 00.000000		
00.001001	101101	

for $1 \oplus 1 = 0$

Thus $[x \cdot y]_{2'} = 0.001001101101$

So $[x \cdot y]_{TF} = 0.001001101101$

(3)

using true form one-bit multiply

$[x]_{TF} = 0.11011$ $[y]_{TF} = 1.11101$

0.00000 11101
\+ 0.11011 $+[x]_{TF}$
0.11011
0.01101 1 1110 $\to 1, +0$
\+ 0.00000
0.01101
0.00110 11 111 $\to 1, +[x]_{TF}$
\+ 0.11011
1.00001
0.10000 111 11 $\to 1, +[x]_{TF}$
\+ 0.11011
1.01011
0.10101 1111 1 $\to 1, +[x]_{TF}$
\+ 0.11011
1.10000
0.11000 01111 $\to 1$

for $0 \oplus 1 = 1$

Thus $[x \cdot y]_{TF} = 1.1100001111$

using true form two-bits multiply

$x^* = 0.11011$ $2x^* = 1.10110$ $[-x^*]_{2'} = 1.00101$
$y^* = 0.11101$

000.00000 011101 0
\+ 000.11011 $+x^*$
000.11011
000.00110 11 0111 0 $\to 2, +[-x^*]_{2'}$
\+ 111.00101
111.01011
111.11010 1111 01 1 $\to 2, +2x^*$
\+ 001.10110
1 001.10000
000.11000 01111 $\to 1$

for $0 \oplus 1 = 1$

Thus $[x \cdot y]_{TF} = 1.1100001111$

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using booth's algorithm

$[x]_{2'} = 0.11011$ $[y]_{2'} = 1.00011$ $[-x]_{2'} = 1.00101$

00.00000 1000110
\+ 11.00101 $+[-x]_{2'}$
11.00101
11.10010 1 100011 $\to 1, \to 1$
11.11001 01 10001 $+[x]_{2'}$
\+ 00.11011
1 00.10100
00.01010 001 1000 $\to 1, \to 1$
00.00101 0001 100 $\to 1$
00.00010 10001 10 $+[-x]_{2'}$
\+ 11.00101
11.00111 10001

Thus $[x \cdot y]_{2'} = 1.0011110001$

So $[x \cdot y]_{TF} = 1.1100001111$