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Problem 6

2.875_{10}, 0.1796875_{10}

a) $0.875 \times 2 = 1.75$
$0.75 \times 2 = 1.5$
$0.5 \times 2 = 1.0$

$2.875_{10} = \boxed{10.111_2}$

$10.111_2 = \boxed{2.E_{16}}$

$10.111_2 = \boxed{2.7_8}$

$0.1796875 \times 2 = 0.359375$
$0.359375 \times 2 = 0.71875$
$0.71875 \times 2 = 1.4375$
$0.4375 \times 2 = 0.875$

$0.875 \times 2 = 1.75$
$0.75 \times 2 = 1.5$
$0.5 \times 2 = 1.0$

$0.1796875_{10} = \boxed{0.0010111_2}$

$0.0010111_2 = \boxed{0.2E_{16}}$

$0.0010111_2 = \boxed{0.135_8}$

$2.875_{10} = .10111 \times 2^2 =$

0101	1100	0000	0000	0000	0000	0000	0010
5	C	0	0	0	0	0	2_{16}

$0.1796875_{10} = .10111 \times 2^{-2}$

2_{10} 0000010_2
1's comp 1111101_2
2's comp 1111110_2

$=$

0101	1100	0000	0000	0000	0000	1111	1110
5	C	0	0	0	0	F	E_{16}

b) $-2.875_{10} = \boxed{-10.111_2} = \boxed{-2.E_{16}} = \boxed{-2.7_8}$

$-.10111$
01000 1's
01001 2's

$-.10111 \times 2^2 =$

1010	0111	1111	1111	1111	1111	0000	0010
A	7	F	F	F	F	0	2_{16}

$-0.1796875_{10} = \boxed{-.0010111_2} = \boxed{-.2E_8} = \boxed{-.135_8}$

$-.10111$
01000 1's
01001 2's

$-.10111 \times 2^{-2} =$

1010	0111	1111	1111	1111	1111	1111	1110
A	7	F	F	F	F	F	E_{16}

c) 59999901_{16} = 0101 1001 1001 1001 1001 1001 / 0000 0001

$= .1011\ 0011 \times 2^{1} = \boxed{1.0110_2}$

$59999902_{16} = .10110011 00 \times 2^{2} = \boxed{10.1100_2}$

A6666 7FE = 1010 0110 0110 0110 0111 1111 1110

2's 0100 1100 1100 1100 1100 1111 111 1110

1's 0100 1100 1100 1100 1100 1110 111 1101

$-$ 1011 0011 0011 0011 0011 001 000 0010

$= \times 2^{-2}$

$-.1011\ 0011\ 0011\ 0011\ 0011\ 001 \times 2^{-2}$

$= \boxed{-.0010110_2}$