

Denis

Daci

61 Work HW 1

Part 2.

$$3. \text{ Hex } 0 \text{ b} \quad | 1100 \quad | 00010100 \quad | 001110 \quad | 01000000 \\ \text{Hex } > 682 \quad | 10 \quad | 010 \quad | 01101010 \quad | 01000000 \\ \text{Hex } C \quad 8 \quad A \quad 6$$

positive of binary numbers 1011000100000000

$$= 2^{15} + 2^{14} + 2^{10} + 2^9 + 2^5 + 2^3 + 2^1$$

$$- 32768 + 16384 + 2048 + 128 + 32 + 4 + 2 = \\ N60PI = -14120$$

4. Hex $0x A3D4$

$$\text{binary} \quad | 1000 \quad | 0100 \quad | 0000 \quad | 0000 \quad | 0100 \\ A \quad | 1110 \quad | 0111 \quad | 1110 \quad | 0100 \\ 15 \quad 14 \quad 13 \quad 12 \quad 11 \quad 10 \quad 9 \quad 8 \quad 7 \quad 6 \quad 5 \quad 4 \quad 3 \quad 2 \quad 1 \quad 0$$

$$\text{Dec} \quad - 2^{15} + 2^{13} + 2^9 + 2^8 + 2^7 + 2^6 + 2^4 + 2^3 + 2^2 + 2^1 + 2^0 =$$

$$- 32768 + 8192 + 512 + 256 + 128 + 64 + 16 + 4$$

$$= -23596$$

5. 77 positive

$$0000 \quad | 0000 \quad | 0100 \quad | 1101 \quad | 1111$$

6. negative
1111 | 1111 | 1011 | 0010
15 15 F B
F F B B

1 | with black in oil

6. | 6 | 6 | 8

0001	0100	1100	0010
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$$1(16^3) + 6(16^2) + 10(16^1) + 2(16^0) = 5826$$

8, -33

33 positive

~~ERASURES~~

~~o o veget~~

0 b 6438 11982 11432 x⁰
0 b 1100 111010 | -2¹⁵ + 2¹⁴ + 2¹⁰
+ 2⁹ + 2⁸ + 2⁶ + 2⁵ + 2⁴
Hox C E 7 2 10
+ 83 + 21 = -10678

F		T
13		9
		0

$$\partial = \{ B_{11} \}$$

$$= -2261 \quad 114$$

11

00000	11108	0111
0	14	7

00 ✓ 6 100 200
810 R 141

$$0.63 + 14 \cdot 10^3 + 7.16 \times 10^{-1}$$

~~5 10 15 19~~

187 5P/14/9
32 50 Ea
~~15~~ 73

Part 3

3. $600011 \oplus 0011110$

$$d^2 + d^3 = 8 + 11 = 12$$

$$\cdot 00110110$$

$$1/8 + 1/16 + 1/64 = , 2189375 = 12,2109375$$

$$\begin{array}{r} 1000 \\ 01100 \\ \hline 0 \quad 1 \quad c \end{array} \quad \begin{array}{r} 0011 \\ 0110 \\ \hline 3 \quad c \end{array}$$

4. 0×80.93

$$-d^2 + d^4 + d^7 = -109,11 \dots \text{etc.}$$

$$\begin{array}{r} 1001 \\ 10010011 \\ \hline 1001 \end{array} \quad \begin{array}{r} 1001 \\ 0010 \\ \hline 1001 \end{array} \quad \begin{array}{r} 1001 \\ 1001 \\ \hline 1001 \end{array} \quad \begin{array}{r} 1001 \\ 0011 \\ \hline 1001 \end{array}$$

$$1/8 + 1/16 + 1/8 + \frac{1}{256} = .57921825$$

$$+ 0.9142570105$$

5. -67.75

$$1011100,010$$

$$-d^2 + d^5 + d^6 + d^3 + d^0 = -68$$

$$\begin{array}{r} 1011 \\ 1100 \\ \hline 10 \end{array} \quad \begin{array}{r} 010 \\ 0000 \\ \hline 0 \end{array}$$

$$\frac{44}{44} = .01$$

6. G1, F)

$$\begin{array}{r} 6 \\ 0110 \\ \hline 0001 \end{array} \quad \begin{array}{r} 1 \\ 1111 \\ \hline 10001 \end{array}$$

$$d^0 + d^5 + d^6 = 87,94140075$$

$$11110001 = 1/8 + 1/15 + 1/8 + 1/16 + \frac{1}{256} = .8411067$$

7 1111|0101 0109|1101 FS:90
F S 4 D
 $-2^{\circ} 26' + 0^{\circ} 04' + 0^{\circ}$
 $1101 + 130 + 101 = 1428$

8. 0111|0001 1000|1101 0
7 1 1 1 1 0
 $-2^{\circ} 05' + 0^{\circ} 4' + 2^{\circ}$
 $1101 + 130 + 101 = 1015625$

9. 0x 7430 1011 11-91 3 | 000
 $2^{\circ} 25' + 2^{\circ} 0' + 0^{\circ} + 2^{\circ}$
 $118 + 110 + 101 = 1953125$

10. -113,0605

1000|1111,1111|000
 $-2^{\circ} 23' + 2^{\circ} 0' + 2^{\circ} 0'$
 $Y_2 + Y_4 + 1/8 + 1/6 = ,9375$

1.000|1111|1.111|000
F F O

11. 103,078125

01100 111,000|1010
 $2^{\circ} 0' + 25 + 0^{\circ} 0' + 0^{\circ} = 103$
 $Y_5 + Y_8 = ,0703125$

610|0111|000|0100
6 7. 1 0 = 64KJ

12 6 / 6000 11,110 11 / 6000
41 3 B 0

$$2^c + d^1 + 2^0 = 67$$

$$112 + 18 + 1 / 16 = 6875 = 62,5875$$

2. Fill in the missing columns of the following table, you should have your binary values in 2's complement form and be at most 16 bits
(4 points each blank)

Final answers

decimal	binary	hexadecimal
37	0b0000000000100101	0x0025
-37	0b111111111011011	0xFFDB
-14170	0b1100100010100110	0xC8A6
-23596	0b101000011110100100	0xA3D4
-77	0b1111111101100011	0xFFB3
5826	0b0001011011000010	0x16C2
19029	0b0100101001010101	0x4A56
-33	0b1111111110111111	0xFFFFDF
-18678	0b1100111001111010	0xCE7A
-2261	0b11110111001011011	0xF72B
3700	0b0000111001110100	0xOEZU
20713	0b0101000011101001	0xOE9

3. Fill in the missing columns of the following table, For this problem you should have your binary values in 2's complement form and have 8 bits before the binary point and 8 bits after the binary point. (4 points each blank)

decimal	binary	hexadecimal
37.125	0b00100101.00100000	0x25.20
-37.125	0b11011010.11100000	0xDA.E0
12,2109375	0b00001100.00110110	0x0C.36
-109,42578185	0b10010010010.10010011	0x92.93
-67.75	0b1011100.01000000	0x8C.40
99,9414062	0b01100001,11110001	0x61.F1
-10,6992187	0b11110101.01001101	0xF5.4D
113,161560	0b01110001.00011010	0x71.1A
121,195510	0b01111001,0011001	0x79.32
-112.0625	0b10001111.11110000	0x8F.F0
103.078125	0b01100111.00010100	0x67.14
67,6875	0b01000011.10110000	0x43.86