

Closed notes, closed books, no electronic devices of any type. Please use pencil and erase mistakes. Show your work. 10 points

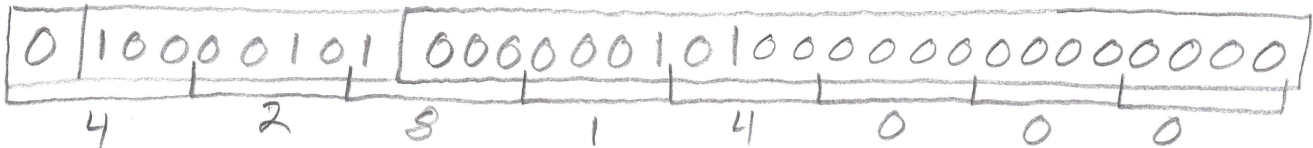
Convert 64.625 to an IEEE-754 floating point expressed in hexadecimal. (5 points)

$$\begin{array}{r} 128 \quad 64 \quad 32 \quad 16 \quad 8 \quad 4 \quad 2 \quad 1 \\ \hline 0 \quad 1 \quad 0 \quad 0 \quad 0 \quad 0 \quad 0 \quad 0 \end{array} = 64$$

$$\begin{array}{r} 1 \overline{) 625} \\ 1 \overline{) 250} \\ 0 \overline{) 500} \\ 1 \overline{) 000} \end{array}$$

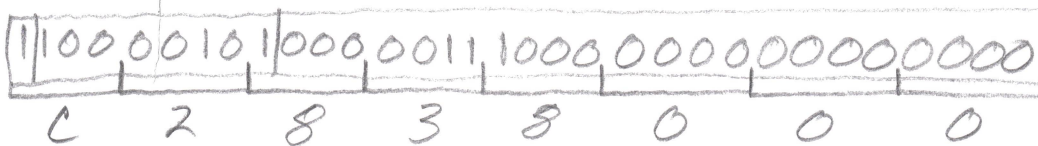
$$64.625 = 01000000101 = 1.000000101 \times 2^6$$

$$127 + 6 = 133 = 128 + 5 = 10000101$$



$$\boxed{0x42814000}$$

Convert 0xC2838000 from IEEE-754 to decimal. (5 points)



Sign: 1, Biased Exponent: $128 + 5 = 127 + 6$

Binary: $1.000000111 \times 2^6 = 1000001.11$

$$\begin{array}{r} 128 \quad 64 \quad 32 \quad 16 \quad 8 \quad 4 \quad 2 \quad 1 \\ \hline 0 \quad 1 \quad 0 \quad 0 \quad 0 \quad 0 \quad 0 \quad 1 \end{array} = 65$$

$$\begin{array}{r} 0.5 \quad 0.25 \quad 0.125 \quad 0.0625 \\ \hline 1 \quad 1 \quad 0 \quad 0 \end{array} = 0.75$$

$$\boxed{-65.75}$$