

1) 100

- a. radix2 = 1100100
- b. radix3 = 10201
- c. radix4 = 1210
- d. radix5 = 400
- e. radix6 = 244
- f. radix7 = 202
- g. radix8 = 144
- h. radix9 = 111

2) r^k

3) binary32 hex

- a. $9 = 41100000_h$
- b. $5/32 = 3F200000_h$

4) Binary32 hex to decimal

- a. $42E48000_h = 114.25$
- b. $00800000_h = 1.2 \cdot 10^{-38}$

5) Add two binary32 hex numbers

- a. 3F000000

6) 80000005_h

1) 100 \rightarrow $\boxed{1100100}$
 Radix 2

$$\begin{array}{r}
 100/2 \\
 \boxed{0} \ 50/2 \\
 \boxed{0} \ 25/2 \\
 \boxed{1} \ 12/2 \\
 \boxed{0} \ 6/2 \\
 \boxed{0} \ 3/2 \\
 \boxed{1} \ 1/2 \\
 \boxed{0}
 \end{array}$$

Radix 3
 \rightarrow $\boxed{10201}$

$$\begin{array}{r}
 100/3 \\
 \boxed{1} \ 33/3 \\
 \boxed{0} \ 11/3 \\
 \boxed{2} \ 3/3 \\
 \boxed{0} \ 1/3 \\
 \boxed{0}
 \end{array}$$

Radix 4
 \rightarrow $\boxed{1210}$

$$\begin{array}{r}
 100/4 \\
 \boxed{0} \ 25/4 \\
 \boxed{1} \ 6/4 \\
 \boxed{2} \ 1/4 \\
 \boxed{0}
 \end{array}$$

Radix 5
 \rightarrow $\boxed{400}$

$$\begin{array}{r}
 100/5 \\
 \boxed{0} \ 20/5 \\
 \boxed{0} \ 4/5 \\
 \boxed{4} \ 0
 \end{array}$$

Radix 6
 \rightarrow $\boxed{244}$

$$\begin{array}{r}
 100/6 \\
 \boxed{1} \ 16/6 \\
 \boxed{4} \ 2/6 \\
 \boxed{2} \ 0
 \end{array}$$

Radix 7
 $\rightarrow \boxed{202}$

$$\begin{array}{r} 100 \overline{) 7} \\ 30 \underline{14} 7 \\ 0 \underline{2} 7 \\ 20 \end{array}$$

Radix 8
 $\rightarrow \boxed{144}$

$$\begin{array}{r} 100 \overline{) 8} \\ 20 \underline{12} 8 \\ 0 \underline{1} 8 \\ 0 \end{array}$$

Radix 9
 $\rightarrow \boxed{111}$

$$\begin{array}{r} 100 \overline{) 9} \\ 0 \underline{11} 9 \\ 1 \underline{1} 9 \\ 0 \end{array}$$

(3)

A)

$9 \rightarrow 1001 \times 2^0$

1.001×2^3

$1245 = 130$

$\boxed{41100000}$

$\odot 10000010 \ 001000 \dots$

B

$5/32 = 0.15625$

0.10100×2^0

1.0100×2^{-1}

$0.15625 \times 2 = 0$

$0.3125 \times 2 = 0$

$0.625 \times 2 = 1$

$0.25 \times 2 = 0$

$.5 \times 2 = 1$

$00111110 \ 0100$

$\boxed{3F200000}$

(4a)

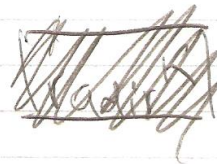
42E48000 \rightarrow 0 10000101 1100100100...

6 59 1.11001001^6
 1110010.01×2^6

$\frac{1}{2} + \frac{1}{4} + \frac{1}{32} + \frac{1}{256}$

$\frac{1}{4}$

114.25



(4b)

00800000

00000000010000...

1.0×2^{-126}

5)

0 01111101 110000...

0 01111011 0000

2^{-2}

1.0×2^{-4}

1.11×2^{-2}

111.0×2^{-4}

1000.0×2^{-4}

11
111

001

1000

1.0×2^{-1}

$127-1=126$

59

0 01111110 0

$BF000000$