

1) $12345678 (10) \Rightarrow 12345678 \% 16 = 14 (E), 771604 \% 16 = 4 (4), 48225 \% 16 = 1 (1), 3014 \% 16 = 6 (6), 188 \% 16 = 12 (C), 11 \% 16 = 11 (B);$

$12345678 (10) \Rightarrow BC614E (16)$

$1000000 (10) \Rightarrow 1000000 \% 16 = 0 (0), 62500 \% 16 = 4 (4), 3906 \% 16 = 2 (2),$

$244 \% 16 = 4 (4), 15 \% 16 = 15 (F);$

$1000000 (10) \Rightarrow F4240 (16)$

2) $12345678 (16) \Rightarrow 1 \times 16^7 + 2 \times 16^6 + 3 \times 16^5 + 4 \times 16^4 + 5 \times 16^3 +$

$+ 6 \times 16^2 + 7 \times 16^1 + 8 \times 16^0 = 268\,435\,456 + 33\,554\,432 + 3\,145\,728 + 262\,144 + 20\,480 + 1\,536 + 112 + 8 = 305\,419\,896$

$12345678 (16) \Rightarrow 12345678 (10)$

$1000000 (16) \Rightarrow 1 \times 16^6 + 0 + 0 + 0 + 0 + 0 + 0 + 0 = 16\,777\,216$

$1000000 (16) \Rightarrow 16777216 (10)$

3)

- А - со сгущенным молоком,
- В - с медом,
- С - с хлебом,

$X = A \&\& B \&\& !C$

4) $A \rightarrow B = !A \mid \mid B,$

Таблица истинности:

$!A \quad B \quad !A \mid \mid B$

1 0 1

1 1 1

0 0 0

0 1 1

$A \leftrightarrow B = (A \&\& B) \mid \mid (!A \&\& !B)$

Таблица истинности:

$A \quad B \quad !A \quad !B \quad (A \&\& B) \quad (!A \&\& !B) \quad (A \&\& B) \mid \mid (!A \&\& !B)$

0 0 1 1 0 1 1

0 1 1 0 0 0 0

1 0 0 1 0 0 0

1 1 0 0 1 0 1

5) Эквивалент $XOR(A, B) \Rightarrow (A \&\& !B) + (!A \&\& B)$

6) $X = (B \rightarrow A) * !(A + B) * (A \rightarrow C) \Rightarrow$

$$\begin{aligned}
X &= !A \mid \mid B * !A * !B * !A \mid \mid C = (!A \mid \mid B) * !B * !A * (!A \mid \mid C) = \\
&(!A \mid \mid B * !B) * (!A * !A \mid \mid C) = (!A * !B + B * !B) * (!A * !A + !A * C) = \\
&(!A * !B + 0) * (!A + !A * C) = (!A * !B) * (!A + !A) * (!A + C) = \\
&(!A * !B) * !A * (!A + C) = (!A * !A) * !B * (!A + C) = !A * !B * (!A + C) = \\
&!B * !A * (!A + C) = \mathbf{!(A * B) * (!A + C)}
\end{aligned}$$