

$$\textcircled{1} \quad 103_4$$

$$= 1 \times 4^2 + 0 \times 4^1 + 3 \times 4^0$$

$$= 19$$

$$\begin{aligned} \textcircled{2} \quad EC9A_{16} \\ &= 14 \times 16^3 + 12 \times 16^2 + 9 \times 16^1 + 10 \times 16^0 \\ &= 60570_{10} \end{aligned}$$

A	= 10
B	= 11
C	= 12
D	= 13
E	= 14
F	= 15

$$\begin{aligned} \textcircled{3} \quad AA.CC_{16} \\ &= 10 \times 16^1 + 10 \times 16^0 + 12 \times 16^{-1} + 12 \times 16^{-2} \\ &= 160 + 10 + \frac{12}{16} + \frac{12}{16^2} \\ &\approx 170.797 \end{aligned}$$

④ a)

$$437 \div 8$$

$$54 \div 8$$

$$6 \div 8$$

Q	R
54	5
6	6
0	6

$$437_{10} = 665_8$$

b) 0.953125×4

$$0.8125 \times 4$$

$$0.25 \times 4$$

Integer	Non-Integer
3	0.8125
3	0.25
1	0

$$0.953125_{10} = 0.331_4$$

5

$$172 \div 16$$

$$10 \div 16$$

Q	R
10	12
0	10

10 = A
11 = B
12 = C
⋮

	Integer	Non-Integer
0.09375 x 16	1	0.5
0.5 x 16	8	0

$$172.09375_{10} = AC.18_{16}$$

⑥

$$113 \div 5$$

$$22 \div 5$$

$$4 \div 5$$

Q	R
22	3
4	2
0	4

$$0.3 \times 5$$

$$\{ 0.5 \times 5$$

$$\{ 0.5 \times 5$$

Integer	Non-Integer
1	0.5
2	0.5

repeating

$$113.3_{10} = 423.1\bar{2}_5$$

⑦

	Integer	Non-Integer
0.05×2	0	0.1
0.1×2	0	0.2
0.2×2	0	0.4
0.4×2	0	0.8
0.8×2	1	0.6
0.6×2	1	0.2
0.2×2		

repeating

$$0,05_{10} = 0,00\overline{0011}_2$$

$$\begin{aligned}
 \textcircled{8} \text{ a)} \quad & 26.76_8 \\
 & = 010 \ 110. \ 111 \ 110_2 \\
 & = 10 \ 110. \ 111 \ 11_2
 \end{aligned}$$

$$\begin{aligned}
 \text{b)} \quad & 11 \ 1101. \ 1010 \ 11_2 \\
 & = 0011 \ 1101. \ 1010 \ 1100_2 \\
 & = 3 \ D. \ AC_{16}
 \end{aligned}$$

A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

$$\begin{aligned}
 \text{c)} \quad & CE.73_{16} \\
 & = 1100 \ 1110. \ 0111 \ 0011_2 \\
 & = 011 \ 001 \ 110. \ 011 \ 100 \ 110_2 \\
 & = 3 \ 1 \ 6. \ 3 \ 4 \ 6_8
 \end{aligned}$$

9

a) No

b) YES

c) MAYBE

d) YES

e) MAYBE

f) YES

10

a) YES

b) YES

c) No

d) No

e) YES

11

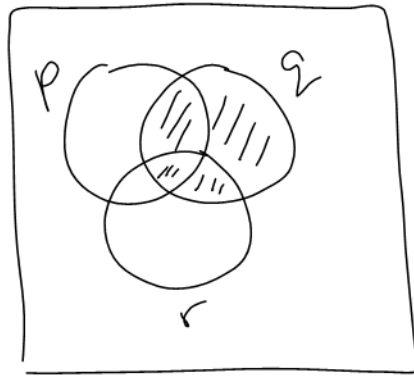
a) $(n \wedge \sim m) \vee m$

b) $n \wedge (m \vee \sim n)$

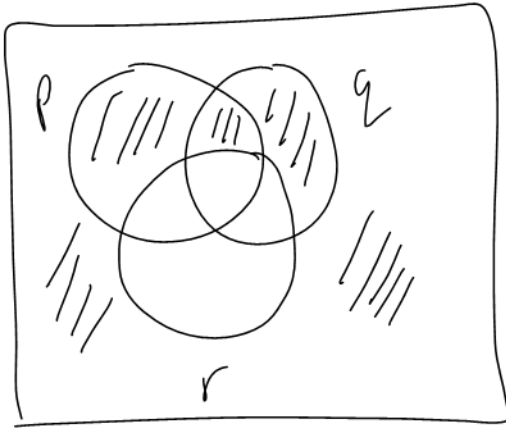
12



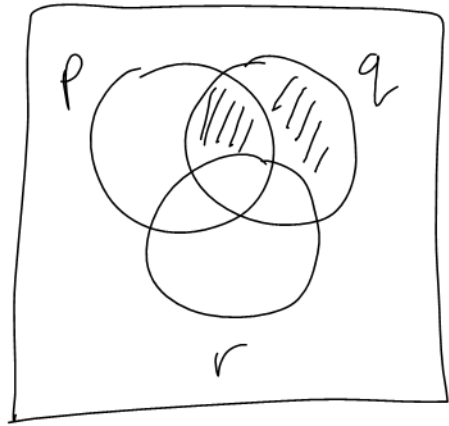
p



q



$\sim r$



$q \wedge \sim r$



$p \vee (q \wedge \sim r)$

13

p	q	r	$\sim p$	$\sim p \wedge q$	$(\sim p \wedge q) \vee r$
0	0	0	1	0	0
0	0	1	1	0	1
0	1	0	1	1	1
0	1	1	1	1	1
1	0	0	0	0	0
1	0	1	0	0	1
1	1	0	0	0	0
1	1	1	0	0	1

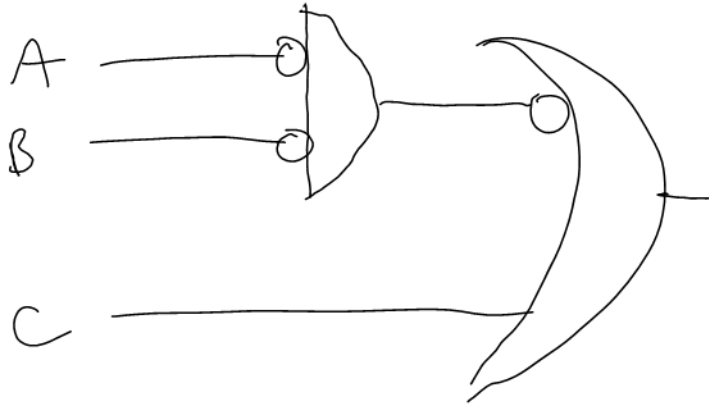
14

p	q	$\sim q$	$p \wedge \sim q$	$(p \wedge \sim q) \vee q$	$p \vee q$
0	0	1	0	0	0
0	1	0	0	1	1
1	0	1	1	1	1
1	1	0	0	1	1

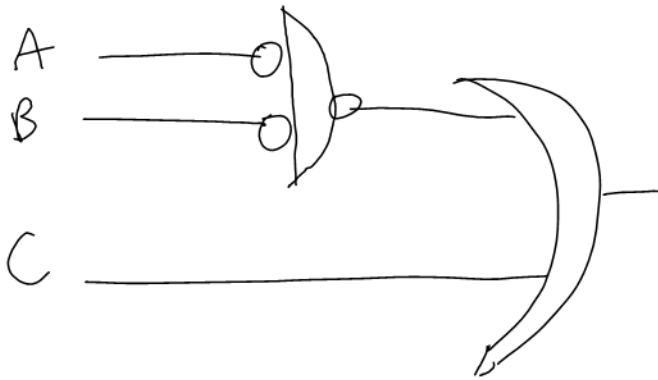
} Identical

Yes. $(p \wedge \sim q) \vee q \iff p \vee q$

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Also acceptable:



16

A	B	\bar{B}	$A + \bar{B}$	$A + B$	$(A + \bar{B})(A + B)$
0	0	1	1	0	0
0	1	0	0	1	0
1	0	1	1	1	1
1	1	0	1	1	1

Identical

$$(A + \bar{B})(A + B) \Leftrightarrow A$$