

1.

a) i)



ii)



iii)



A B C

0 0 0

0 0 1

0 1 0

0 1 1

1 0 0

1 0 1

1 1 0

1 1 1

$A \oplus C$

0

1

0

1

1

0

1

0

$B \cup C$

0

1

1

1

0

1

1

1

$(A \oplus C) \cap (B \cup C)$

0

1

0

1

0

0

1

0

c) i) 2, 6, 12, 20, 30

ii) 5.

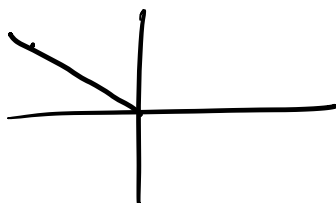
d)

$$220 + 147 = 367$$

$$367 - 51 = 316$$

$$380 - 316 = 34$$

2)



b)

i) $\begin{pmatrix} 1 & 8 \\ 2 & 4 \end{pmatrix}$

ii) $\frac{1}{10} \begin{bmatrix} 6 & -7 \\ -2 & 4 \end{bmatrix}$

c) $\begin{pmatrix} 1 & 1 & 1 & 0 \\ 1 & -2 & 2 & 4 \\ 1 & 2 & -1 & 2 \end{pmatrix}$

$\begin{pmatrix} 1 & 1 & 1 & 0 \\ 0 & -3 & 1 & 4 \\ 0 & 1 & -2 & 2 \end{pmatrix}$

$\begin{pmatrix} 1 & 1 & 1 & 0 \\ 0 & -3 & 1 & 4 \\ 0 & 0 & . & \end{pmatrix}$

$\begin{pmatrix} 1 & 1 & 1 & 1 \end{pmatrix}$

$$\begin{array}{cccc}
 1 & 1 & 1 & 0 \\
 0 & -3 & 1 & 4 \\
 0 & 0 & 1 & -\frac{18}{5} \\
 1 & 1 & 1 & 0 \\
 0 & -3 & 0 & \frac{38}{5} \\
 0 & 0 & 1 & -\frac{18}{5} \\
 1 & 1 & 0 & \frac{18}{5}
 \end{array}$$

$$\frac{18}{5}$$

3. $P \cup q$

P	q	r	$P \wedge q$	$q \wedge r$	\neg
0	0	0	0	0	0
0	0	1	0	0	0
0	1	0	0	0	0
0	1	1	0	1	1
1	0	0	0	0	0
1	0	1	0	0	0

1	1	0	1	0	1
1	1	1	1	1	1

P	q	r	$\neg P$	$\neg q$		
0	0	0	1	1	1	0
0	0	1	1	1	1	1
0	1	0	1	0	1	0
0	1	1	1	0	1	1
1	0	0	0	1	1	0
1	0	1	0	1	1	1
1	1	0	0	0	0	1
1	1	1	0	0	0	1

d

i) $q \rightarrow p$

ii) $q \wedge \neg p$

iii) $q \leftrightarrow p$

iv) $\neg q \rightarrow \neg p$

$\forall x : x \text{ (flowering plants)} \rightarrow x \text{ (trees)}$

$$4.70.4$$

$$i) 0.36$$

$$i) 0.18$$

$$P(A|B) = 70\% \quad A = 40\%$$

$$0.18 + 0.28 = 0.46$$

$$460$$

$$c) A = 95\% \quad 1\% \quad P(B|A)$$

$$0.00001$$

$$d) i) 7/10$$

$$ii) 18/32$$

$$iii) 50/54$$

Focus on outside browsers as more chance of making sales.

$$x : x \text{ is } \mathbb{Z}^+ \text{ and } x < 10 \text{ and } x \text{ is odd}$$

7.

i) 2.9

ii) -12

iii) -2

iv) ~~9~~ 9

v) 2

Follow as $2.4 + 3.2 = 5.6 = 6$

$$2.4 = 3$$

$$3.2 = 4 = 7$$

A ^{proper} subset of B

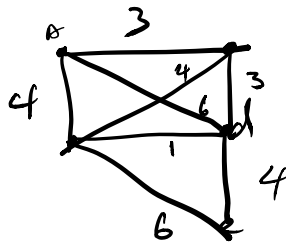
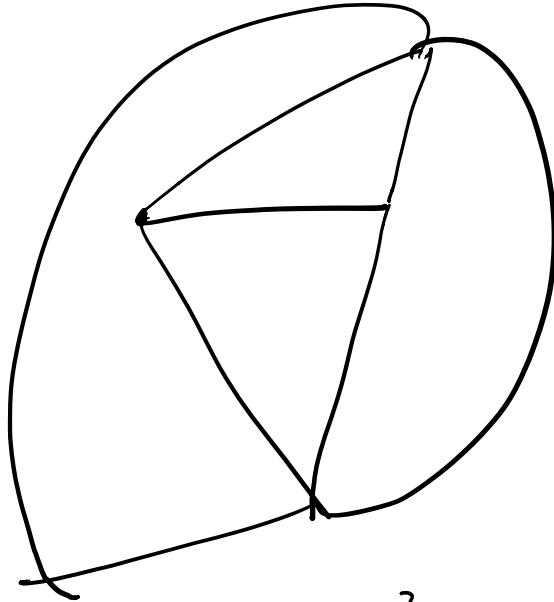
A is proper subset So same value

c) NO $2, 4, 6, \emptyset, 2, 4, 6,$
NO $2, 4, 2, 6, 4, 6$
 $\{1, 3, 5\}$

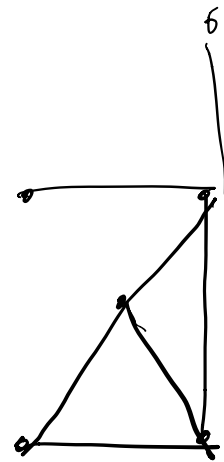
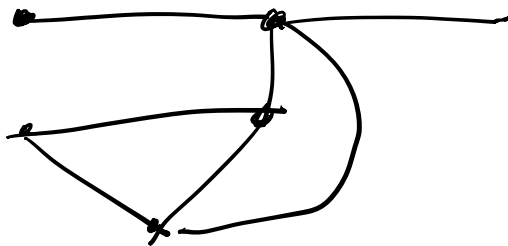
$$x \in \mathbb{Z}^+ \mid 2x-1 \mid x \leq 5$$

P V 7 r U 7 q

5.



A, c, d, e 9



A has 3 edges B has 2 edges

1, 3	1, 4	1, 5
2, 3	2, 4	2, 5
3, 3	3, 4	3, 5

• a) anti

21 903

4^s

21,0

85 272

- -

$$272, 85 = 17$$

$$85, 17 = 5$$

$$17, 5 = 0$$

$$5, 0$$

$$133 \quad 760$$

$$760 \quad 133 = 95$$

$$133 \quad 95 = 38$$

$$95 \quad 38 = 19$$

$$y = \frac{x+1}{x-1}$$

$$y(x-1) = x+1$$

$$y(x-1) - 1 = x$$

$$yx - y - 1 = x$$

$$\frac{1+y}{y-1} = x \quad (\text{crossed out})$$

$$y = m + n$$

$$y - n = m$$

$$y - m = n$$

$$y - n + y - m$$

$$2y - n - m$$

$$n + m = 2y$$

$$y = m^2 + n^2$$

$$y - m^2 = n^2$$

$$\sqrt{y - m^2} = n$$

$$\sqrt{y - n^2} = m$$

--

$$n = \sqrt{y - m^2}$$

$$y = m$$

$$y = m - n$$

$$y - m = n$$

$$y + n = m$$

$$m - n = y$$

$$m + n = y$$