Asian university for women

Mathematics Sample question

Part -1: Multiple choice questions (25 questions), each questions carry one mark

Part -2: Free response questions (4 questions)

Time: One hour **Full marks: 50**

Put an $*$ on the answer you think is correct for an each multiple choice question.

1. **When the product of (-9) and (-2) is divided by (-6), the quotient is-**

a) $\frac{11}{6}$

b) $\frac{1}{3}$

c) -3

d) 3

2. **If** $\frac{r+2}{6} = \frac{r}{6} + \frac{1}{3}$ **, then** r =?

a) **All the values except** 0

b) 0 **only**

c) **No values**

d) $-\frac{1}{3}$

3. $(\frac{16}{49})^{\frac{1}{4}}$ =?

a) $\frac{4}{7}$

b) $\frac{7}{4}$

c) $\sqrt{\frac{4}{7}}$

d) $\sqrt[3]{\frac{4}{7}}$

4. **If** z **is not equal to** 0, $4^z + 4^z + 4^z + 4^z$ =?

a) 4^{z+2}

b) 4^{3z}

c) 16^z

d) 4^{z+1}

5. **If** n **is even number and** k **irrational number, then** $\sqrt[n]{-k}$ **must be-**

a) **Positive number**

b) **Negative number**

c) **Imaginary number**

d) **Complex number**

6. **If $\log_x 16 = 2$, then x =?**

a) **8**
b) **2**
c) **4**
d) **1**

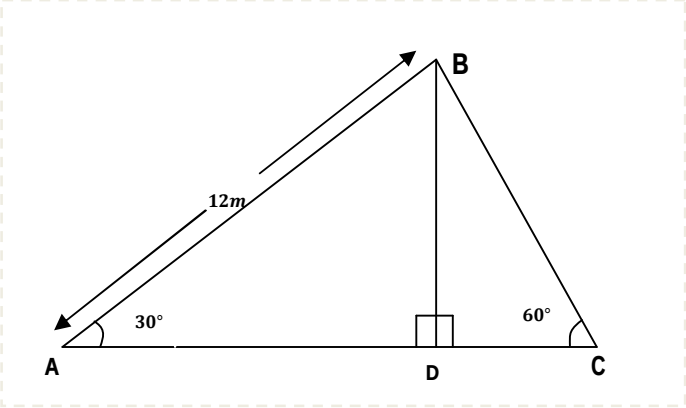
7. **What is $3\log_6 5 + \frac{1}{2}\log_6 4$ in single logarithm?**

a) $\log_6 20$
b) $\log_6 60$
c) $\log_8 250$
d) $\log_6 250$

8. $a^{\log_a \frac{1}{x}}$ =?

a) $\frac{1}{x}$
b) **0**
c) $\log \frac{1}{x}$
d) a

9.



According to figure, length of DC =?

a) $10.4m$ *or* $6\sqrt{3}\,m$
b) $3.5m$ *or* $\frac{6}{\sqrt{3}}$
c) $3m$
d) **None of the above.**

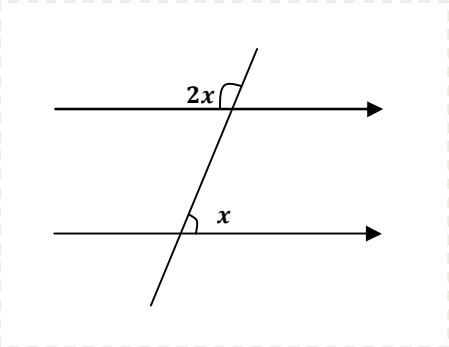
10. **If $tan\,\theta = \frac{3}{4}$, then $cos\theta$ =?**

a) $\frac{5}{4}$
b) $\frac{4}{5}$

c) $\frac{4}{3}$

d) $\frac{3}{4}$

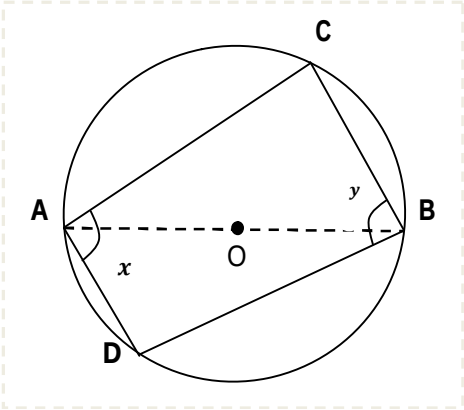
11.



What is the value of x?

a) $45°$
b) $60°$
c) $30°$
d) $75°$

12.



AB is the diameter of the circle with O its centre. Which of the following is true?

a) $x + y = 270°$
b) $x = 90° + y$
c) $y = 180° - x$
d) $x + 2y = 180°$

13. $P(x, 4)$ And $Q(4, 8)$ are two points. The gradient of the line passing through these two points is 2. What is the value of x ?

a) 0

b) 8
c) 4
d) 2

14. $A(3,\ 4)$ **And** $B(6, 12)$ **are two points. A line intersects the line AB at right angle. What is the gradient of the line?**

a) $-\frac{8}{3}$
b) $\frac{3}{8}$
c) $-\frac{3}{8}$
d) $-\frac{8}{9}$

15. Equation of the line N is $y = \frac{5}{2}x + 12$, **and of line M is** $y = \frac{ax}{15} - 7$. **They are perpendicular to each other. What is the value of a?**

a) 5
b) -6
c) $\frac{1}{6}$
d) $-\frac{1}{6}$

16. Consider the following sets

$\emptyset$, $A = \{a\}$, $B = \{a, b\}$, $C = \{a.b.c\}$

Which of the following statement is true?

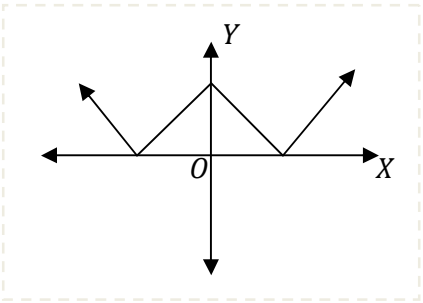
a) $\emptyset$ **is a subset of** A
b) A **is not subset of** B
c) Set A **equals to set** B
d) None of the above.

17. Determine which set is the null set?

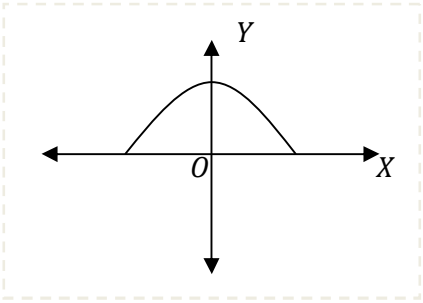
a) $A = \{x:\ x + 7 = 2\}$
b) $B = \{x:\ x^2 = 9\ ,\ 2x = 4\}$
c) $C = \{x:\ x^2 = 9,\ 3x = 9\}$
d) $D = \{x:\ x^3 = 8\ ,\ 2x = 4\}$

18. Which graph has symmetry with respect to origin?

a)



b)



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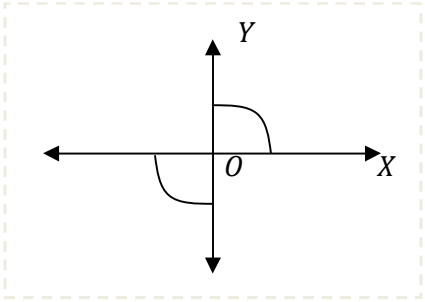

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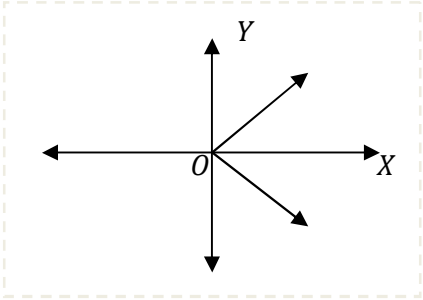
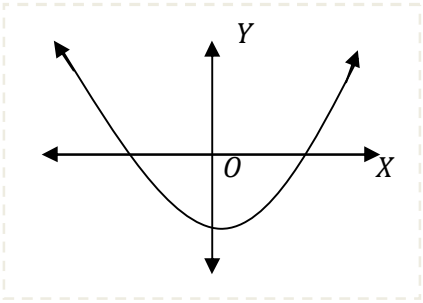
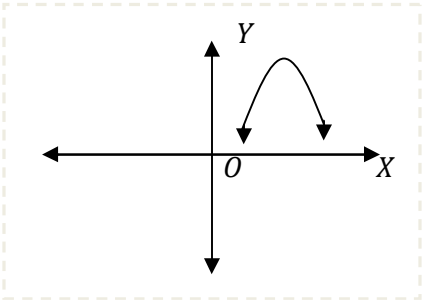


19. Which of the graph is not a function?

a)



b)



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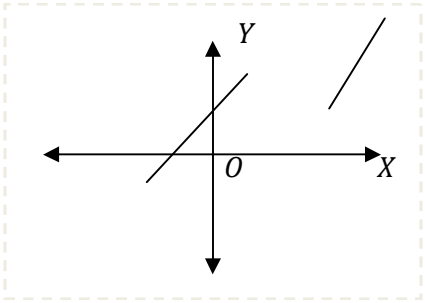
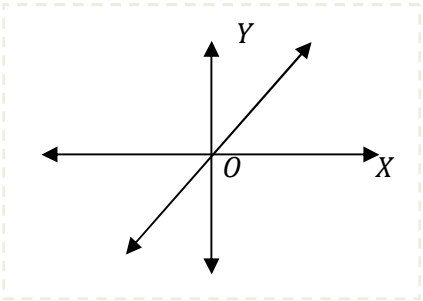
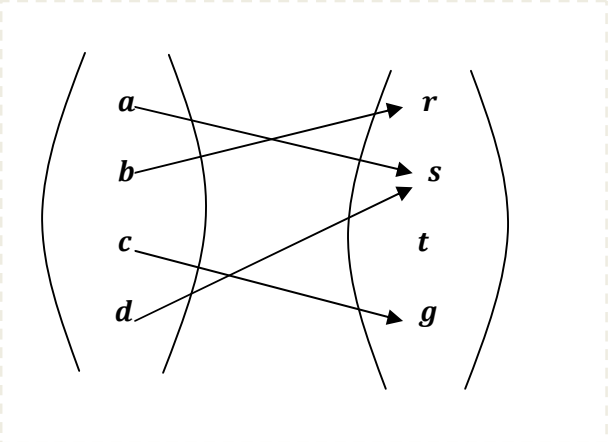


d)



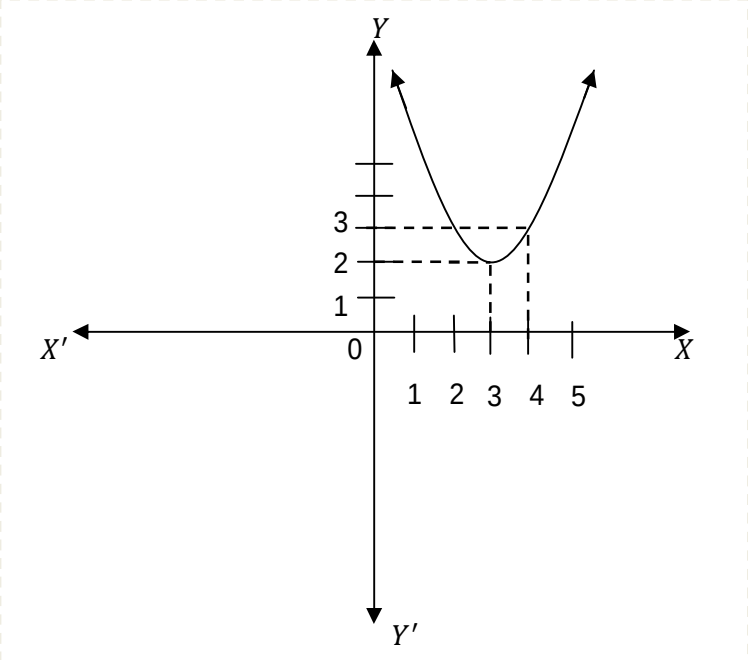
20.



What is the image of a?

a) r
b) s
c) t
d) g

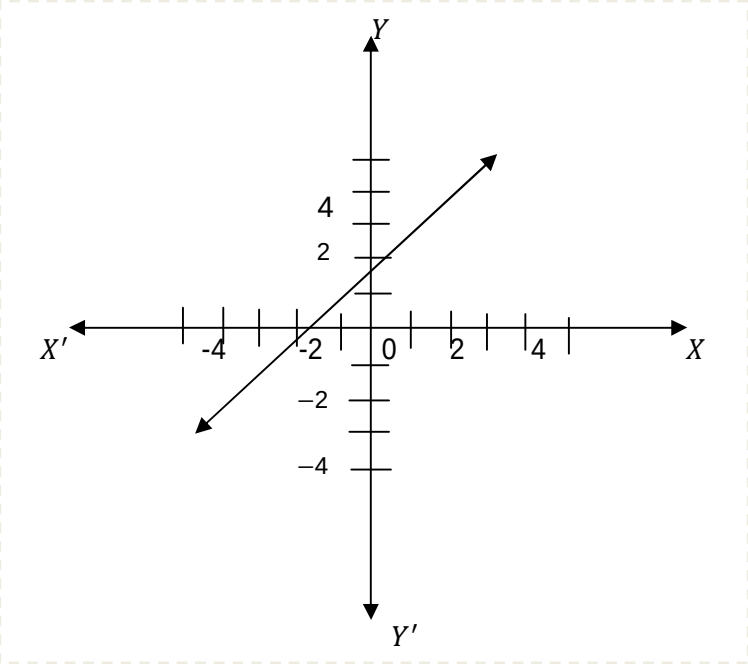
21.



The graph has a function f. If $f(a) = 2$, then what is the value of $f\left(\frac{4a}{3}\right)$ =?

a) 1
b) 6
c) 3
d) 2

22.



What is the domain of the graph?

a) $-4 < x < 4$
b) $-4 \leq x$
c) $x \geq 4$
d) All real numbers.

23. $3x < 4x - 3 \leq 33$ **. Which of following number will satisfy the inequality?**

a) 0
b) 1
c) 3
d) 9

24. What is the vertical asymptote of $y = \frac{3}{x-2}$ **?**

a) $x = 3$
b) $x = -2$
c) $Y - axis$
d) $x = 2$

25. What is x **intercept of** $y = x^2 - 16$ **?**

a) $(4, 4)$
b) $(-4, 0)$
c) $(0, -4)$
d) $(0, 4)$

Part II : Free Response Questions

4 questions

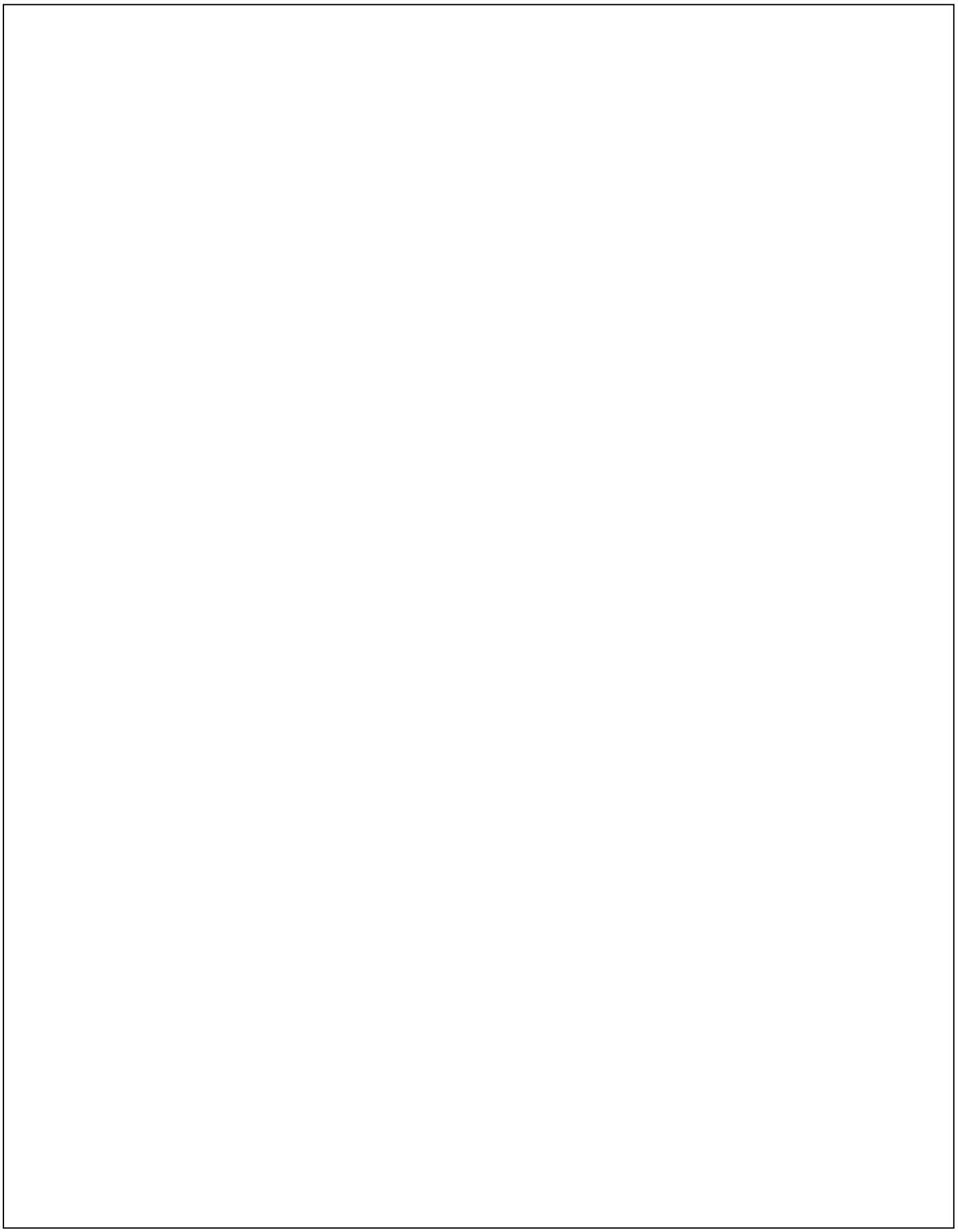
Please show your work on each of the following four questions

1. The cash price of a television set is $\$750$. Robert buys it on hire purchase and pays a deposit of 25% of the cash price and interest is charged at $8\frac{1}{2}\%$ per year on the balance. He pays the rest in 24 monthly installments.

a) Calculate the deposit Robert has to pay. [3 Marks]

b) Calculate the interest he will be charged. [3 Marks]

c) Calculate the monthly installment. [3 Marks]



2. A card is drawn from a pack of 52 playing cards (well-shuffled so that the drawing is random). There are 26 black cards and 2 red aces in the pack.
a) What is the total number of possible outcomes of this experiment?
b) How many of these outcomes have the occurrence of –
i) A black card?
ii) A red ace?

[3 Marks]

3. Write down the equation of a straight line-

a) Through $(5, 11)$ parallel to the x-axis. **[2 Marks]**

b) Which is perpendicular bisector of the line joining $(2, 0)$ and $(6, 0)$. **[3 Marks]**

c) Through $(0, -10)$ parallel to $y = 6x + 3$ **[2 Marks]**

d) Through $(0, -1)$ perpendicular to $3x - 2y + 5 = 0$ **[2 Marks]**

4. Car *A* travelled along a straight road from town *X* to town *Y* at a constant speed of $75km/h$. Car *B* travelled from town *Y* to town *X* at a constant speed of $65km/h$. Both started their journeys at the same time and travelled on the same road. If they passed each other after travelling $2\frac{3}{4}$ hours, find the distance between *X* and *Y*.

[4 Marks]

……**Key : part – I**

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1) - C
2) - A
3) - C
4) – D
5) – C
6) - C
7) - D
8) - A
9) - B
10) - B
11) – B
12) - C
13) - D
14) – C
15) – B
16) – A
17) – B
18) –C
19) – C
20) –B
21) – C
22) –D
23) – D
24) – D
25) – B

Key: Part II

1) a) $ 187.50
   b) $ 95.63
   c) $ 27.40

2) a) 52 equally likely possible outcomes.
   b) i) $^{1}/_{2}$

ii) $^{1}/_{26}$

3) a) $y = 11$
   b) $x = 4$
   c) $7x - y - 28 = 0$
   d) $y = -\frac{2}{3}x - 1$

4) 385 km

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