

$$(1.1) \quad 1.1.1 \quad x = \frac{1}{2} \text{ or } -4 \quad (2)$$

$$1.1.2 \quad x^2 - 6x + 2 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{6 \pm \sqrt{36 - 4(1)(2)}}{2}$$

$$= \frac{6 \pm \sqrt{28}}{2}$$

$$\therefore x = \frac{3 + \sqrt{7}}{1} \text{ or } \frac{3 - \sqrt{7}}{1}$$

$$= 5,65$$

$$= 0,35$$

(if only sqrt form)
-1

WF
1/4

$$1.1.3 \quad \text{Let } k = x^2 + 5x$$

$$\therefore \frac{k}{2} + \frac{12}{k} = -5$$

$$k^2 + 24 = -10k$$

$$\therefore k^2 + 10k + 24 = 0$$

$$(k+4)(k+6) = 0$$

$$k = -4 \text{ or } k = -6$$

$$\therefore x^2 + 5x = -4 \text{ or } x^2 + 5x = -6$$

$$x^2 + 5x + 4 = 0 \text{ or } x^2 + 5x + 6 = 0$$

$$(x+1)(x+4) = 0 \text{ or } (x+2)(x+3) = 0$$

$$x = -1 \text{ or } -4$$

$$\text{or } -2 \text{ or } -3$$

1.1.4

$$x = 4^3$$

$$= 64$$

(8)

(2)

$$1.1.5 \quad 2^{2x}(1+1) = 32 \checkmark$$

BD
not $2^{2x} = 16$
o/3

$$2^{2x} = 16 \checkmark$$

$$= 2^4$$

$$x = 2 \checkmark$$

(3)

1.1.6

$$4(x-3) = x^2 - 6x + 9 \checkmark$$

$$x^2 - 10x + 21 = 0 \checkmark$$

$$(x-3)(x-7) = 0 \checkmark$$

$$x = \underset{\checkmark}{3} \text{ or } x = 7 \checkmark$$

(5)

1.2

$$x = 4y - \underset{\checkmark}{4} \rightarrow xy = 8$$

$$\therefore (4y-4)(y) = 8$$

$$4y^2 - 4y - 8 = 0 \checkmark$$

$$y^2 - y - 2 = 0$$

$$(y+1)(y-2) = 0 \checkmark$$

$$y = -1 \text{ or } y = 2 \checkmark$$

$$\therefore x = 4(-1) - 4 \quad \text{or } x = 4(2) - 4$$

$$= -8 \checkmark$$

$$= 4$$

\checkmark
(6)

$$\text{or } y = \frac{x+4}{4} \rightarrow \dots$$

1.3

$$p^2 + 7p - 8 \leq 0 \checkmark$$

$$(p+8)(p-1) \leq 0 \checkmark$$



$$-8 \leq p \leq 1 \checkmark \checkmark \quad \text{If } x \quad \frac{3}{4} \quad (4)$$

1.4

$$= \sqrt{3} \cdot \sqrt{16 \cdot 3} - \frac{3^{2a} \cdot 3^2}{3^{2a}} \checkmark$$

$$= \boxed{4\sqrt{3}} \sqrt{3} - 9 \checkmark$$

$$= 12 - 9 = 3 \checkmark \quad (4)$$

1.5

$$(1) \quad 2m + 5 = 0 \checkmark$$

$$\therefore m = -\frac{5}{2} \checkmark \quad (2)$$

$$(2) \quad 2m + 5 < 0$$

$$m < -\frac{5}{2} \checkmark \quad (1)$$

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2.1

$$\text{subst } (6; 0) \rightarrow y = -2x + d$$

$$\therefore 0 = -12 + d \quad \therefore d = 12 \quad (2)$$

2.2

$$y = a(x+2)(x-6) \checkmark$$

$$\text{subst } \left(\begin{matrix} \swarrow \\ 0 \end{matrix} ; 12 \right)$$

$$12 = a(-12) \checkmark$$

$$\therefore a = -1 \checkmark$$

$$y = ax^2 + bx + 12 \checkmark$$

$$S: 0 = 4a - 2b + 12 \checkmark$$

$$T: 0 = 36a + 6b + 12 \checkmark$$

$$b = 4 \checkmark$$

$$a = -1 \checkmark$$

$$\therefore y = -(x^2 - 4x - 12) \checkmark$$

$$= -x^2 + 4x + 12 \checkmark$$

(5)

2.3

TP(x; y)

$$x = \frac{-b}{2a}$$

$$\text{or } \frac{-2+6}{2}$$

$$= \frac{-4}{2(-1)}$$

(2; 16)

$$= 2 \checkmark \checkmark \quad \text{CA}$$

$$\therefore y = -4 + 8 + 12 = 16 \checkmark \quad (3)$$

2.4

$$K < 16 \quad \text{CA} \checkmark \checkmark$$

$$(y \leq 16 \text{ deduct 1})$$

$$\text{If } K > 16 \quad \text{0/2}$$

(2)

2.5

$$x \leq 0 \quad \checkmark$$

or \checkmark

$$x \geq 6 \quad \checkmark$$

(3)

15

3.1

(1)

$$x = -1 \quad \checkmark$$

$$\text{and } y = -3 \quad \checkmark$$

(2)

(2) x-int

$$0 = \frac{2}{x+1} - 3 \quad \checkmark$$

$$0 = 2 - 3(x+1)$$

$$= 2 - 3x - 3$$

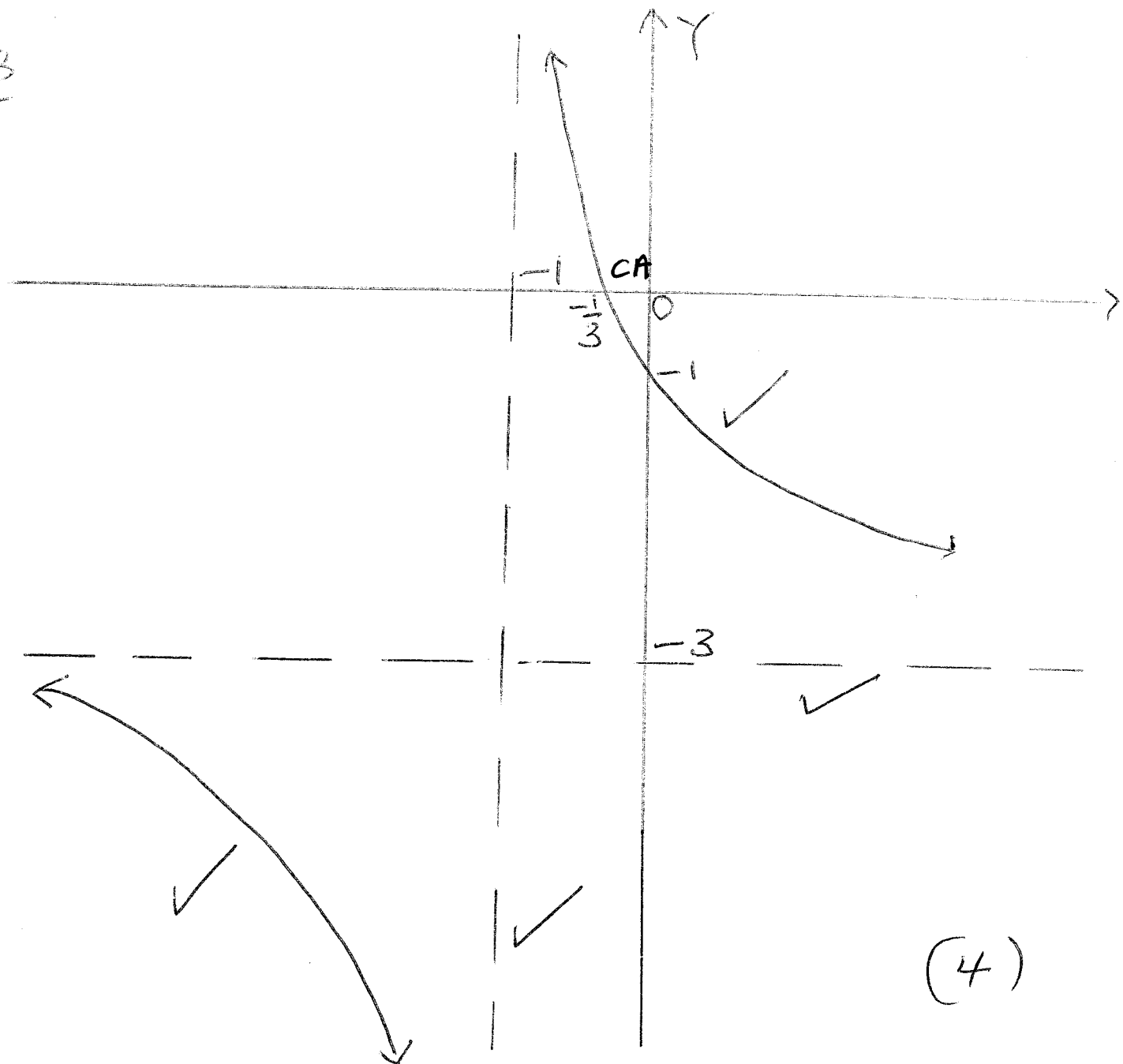
$$x = -\frac{1}{3} \quad \checkmark$$

y-int

$$y = 2 - 3 = -1 \quad \checkmark$$

(3)

3.1.3



(4)

3.1.4

$$y = -x + C$$

Subst (-1; -3)

$$-3 = 1 + C$$

$$\therefore C = -4$$

$$y = -x - 4$$

(2)

3.2

$$y = \frac{k}{x-5} + 1$$

Subst (2; 0)

$$0 = \frac{k}{-3} + 1$$

$$\therefore 0 = k - 3$$

$$k = 3$$

(4)

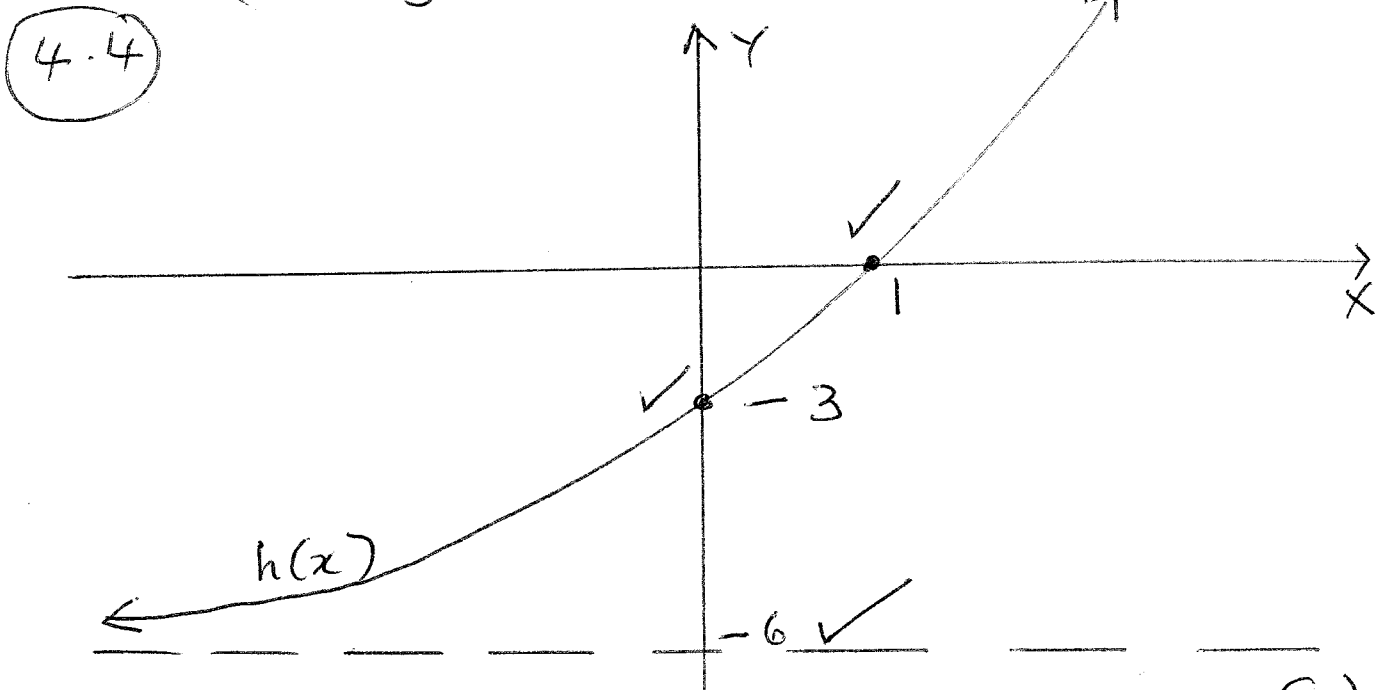
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Q4 (4.1) $y > -6$ ✓ ✓ $y \in (-6; \infty)$ (2)
 if \geq 1/2

(4.2) y -int ($x=0$)
 $\therefore y = 3(1) - 6$ ✓
 $= -3$ ✓ (2)

(4.3) x -int ($y=0$)
 $\therefore 0 = 3 \cdot 2^x - 6$ ✓
 $6 = 3 \cdot 2^x$ -1 if not $2^x = 2$
 $2^x = 2$ ✓ $2/3$
 $x = 1$ ✓ (3)

(or log - - -)



(4.5) $3 \cdot 2^x - 6 = 18$ BD if
 $\therefore 3 \cdot 2^x = 24$ not $2^x = 8$
 $2^x = 8$ ✓ $0/2$
 $x = 3$ ✓ (2)

(4.6) $x < 3$ ✓ ✓ (2)

Q5 (5.1) Rebecca:

$$\begin{aligned}
 (S.I) \quad A &= P(1 + n \cdot i) \quad \text{WF } 0/2 \\
 &= R6000 \left(1 + 5 \left(\frac{8,5}{100} \right) \right) \checkmark \\
 &= R8550 \quad \checkmark
 \end{aligned}$$

Also 10% of R6000 = R600 ✓
 Thus Investment = R9150

Sarah:
 (C.I)

$$\begin{aligned}
 A &= P(1 + i)^n \\
 &= R6000 \left(1 + \frac{8}{400} \right)^{5 \times 4} \\
 &= R8915,68 \quad \checkmark
 \end{aligned}$$

Rebecca received the bigger amount. ✓ (7)

(5.2)

$$\frac{1}{2} P = P(1 - i)^5$$

$$1 - i = \sqrt[5]{\frac{1}{2}} \quad \checkmark$$

$$1 - \sqrt[5]{\frac{1}{2}} = i \quad \checkmark$$

$$= 0,12944 \quad \checkmark$$

$$\therefore r = 12,94\% \quad \checkmark$$

If 13% 4/5
 or 12,9%

WF

1/5

for $\frac{1}{2} = (1 - i)^5$

2/5

for $\frac{1}{2} = (1 + i)^5$

$$\sqrt[5]{\frac{1}{2}} - 1 = i$$

If $2x = x(1 - i)^5$

2/5

(5)

5.2

(1)

$$1 + i_{\text{eff}} = (1 + i_{\text{nom}})^{\text{nom}}$$

$$= \left(1 + \frac{7,5}{1200}\right)^{12}$$

formula ✓
must be 12 ✓
else 1/3

$$\therefore i_{\text{eff}} = 1,07763 - 1$$

$$= 0,07763 \quad \checkmark$$

$$\therefore r = 7,76\% \quad (3)$$

IF 8%
or 7,8%
2/3

(2)

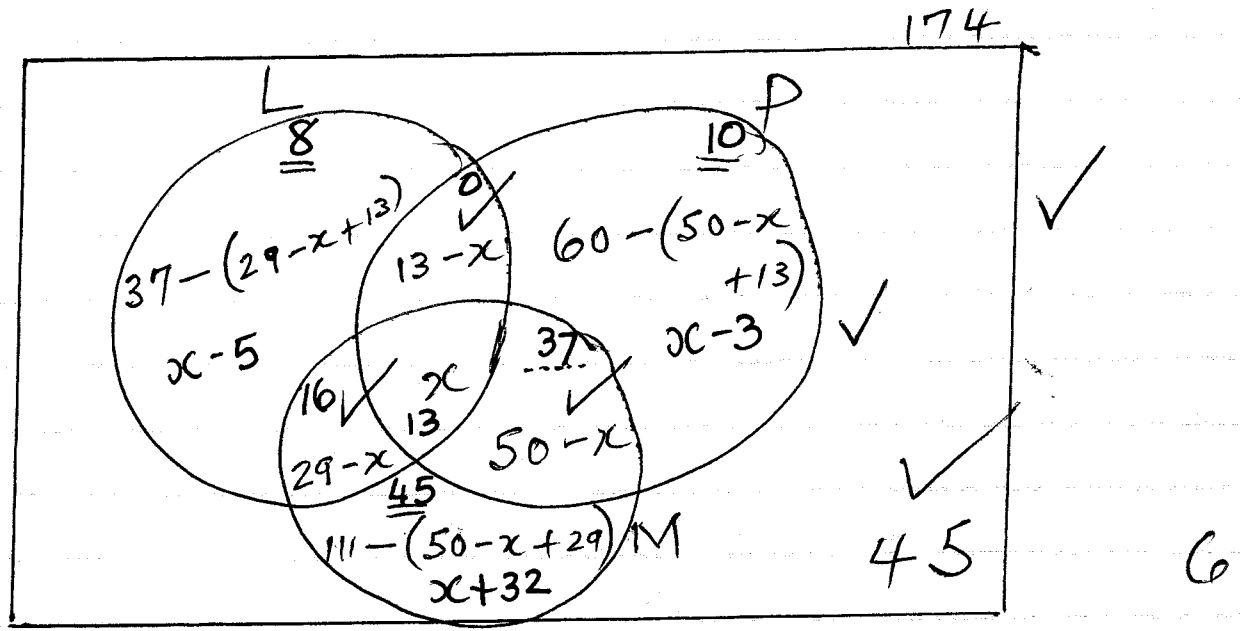
$$A = 576,000 \left(1 + \frac{7,5}{1200}\right)^{36} \left(1 + \frac{9}{1200}\right)^{48}$$

$$= R1031804,16 \quad \checkmark \quad (5)$$

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Q6

6.1



6.2 Sum - - - + 45 = 174 ✓✓

IF use $x = 13$ $\therefore x = \frac{13}{0,2}$

2

6.3
6.3.1

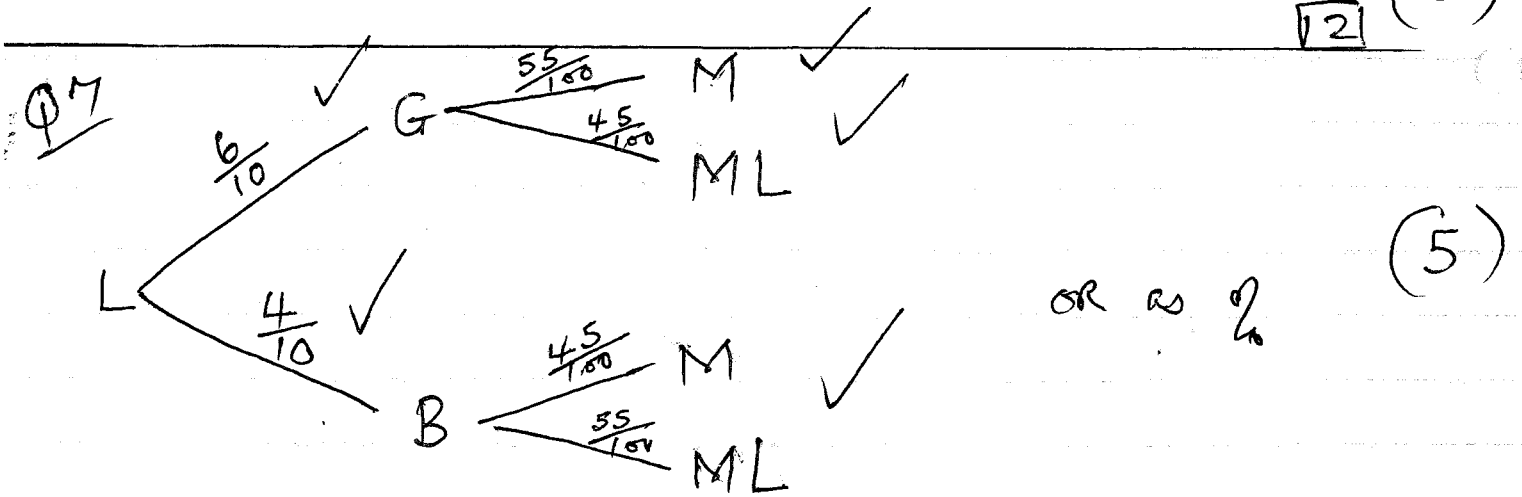
$$\frac{37}{174} = 0,21$$

6.3.2

$$M \text{ or } P \text{ or } L = \frac{8 + 10 + 45}{174} = \frac{63}{174} = \frac{21}{58} = 0,36$$

(2)

12 (2)



$$7.2 \quad P(M) = \frac{6}{10} \times \frac{55}{100} + \frac{4}{10} \times \frac{45}{100}$$

$$= \frac{33}{100} + \frac{9}{50}$$

$$= \frac{51}{100}$$

(3)

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