Gr 10 2025 Nov P1 /100 14.11.25

1.1 True ✓ (1)

1.2 $100 \quad 115 \quad 121$

$\sqrt{100} \quad \sqrt{115} \quad \sqrt{121}$ 100 121 ✓

$10 \quad \sqrt{115} \quad 11$

$-10 \quad -\sqrt{115} \quad -11$

$\therefore -10$ and -11 ✓ (2)

ans only 0/2

1.3 $x = 2,1\dot{3}$

$100x = 213,33\ldots$ ✓

$10x = 21,33\ldots$ ✓

$90x = 192$

$x = \frac{192}{90}$

$= \frac{32}{15}$ ✓ (3)

2.1 1. $2x^{\frac{3}{5}}\left(\frac{1}{2}x^{\frac{5}{3}} - \frac{5}{4}x^{-\frac{3}{5}}\right)$

$= x^{\frac{34}{15}} - \frac{5}{2}x^{0}$

$= x^{\frac{34}{15}} - \frac{5}{2}$ ✓ ✓ (2)

2. $\frac{9^x}{2.9^{x-1} - 3^{2x-1}}$

$9 = 3^2$

$\therefore \frac{(3^2)^x}{2(3^2)^{x-1} - 3^{2x-1}}$

$= \frac{3^{2x}}{2.3^{2x-2} - 3^{2x-1}}$ ✓pb

$= \frac{3^{2x}}{2.3^{2x}.3^{-2} - 3^{2x}3^{-1}}$

$= \frac{3^{2x}}{3^{2x}(2.3^{-2} - 3^{-1})}$ ✓cf

$= \frac{1}{\frac{2}{3^2} - \frac{1}{3}}$

$= \frac{1}{\frac{2}{9} - \frac{1}{3}}$

$= \frac{1}{\frac{2-3}{9}}$

$= \frac{1}{-\frac{1}{9}}$ ✓

$= 1x - \frac{9}{1}$

$= -9$ ✓ (4)

2.2. 1. $x^3 - 2x^2 - x + 2$

$= x^2(x-2) - 1(x-2)$

$= (x-2)(x^2-1)$ ✓

$= (x-2)(x-1)(x+1)$ ✓ (2)

2. $8x^3 - \frac{27}{64}y^3$

$= (2x - \frac{3}{4}y)(4x^2 + \frac{3}{2}xy + \frac{9}{16}y^2)$ ✓A ✓A (2)

2.3. $\frac{5}{x} - \frac{x}{5} = 5$

$(\frac{5}{x} - \frac{x}{5})^2 = (5)^2$

✓LHS

$\frac{25}{x^2} - 2 + \frac{x^2}{25} = 25$

$\frac{25}{x^2} + \frac{x^2}{25} = 27$ ✓ans (2)

3.1. $2x = -\frac{5}{x} + 7$

LCD $= x$ $(\because x \neq 0)$

x thru

$2x^2 = -5 + 7x$

$2x^2 - 7x + 5 = 0$ ✓std form

$(2x-5)(x-1) = 0$ ✓factors

$\therefore x = 5/2$ or 1 ✓ans (3)

3.2. $3x^{-2/5} - 18 = 0$

$x^{-2/5} = 6$ ✓

$(x^{-2/5})^{-5/2} = \pm(6)^{-5/2}$

$x = \pm 0{,}01$ ✓ ✓ (3)

3.3. 1. $-3 \leq 7 - 5x < 12$

-7: $-10 \leq -5x < 5$ ✓

$\div -5$: $2 \geqslant x > -1$ ✓ (2)

2. 

$x \in (-1; 2]$ ✓ (1)

3.4. $3x - y - 9 = 0$ ... 1 $\quad 3x + 2y + 4 = 0$ .. 2

(1): $3x - 9 = y$ ✓

(2) $3x + 2(3x - 9) + 4 = 0$ ✓

$3x + 6x - 18 + 4 = 0$

$9x = 14$

1,56 $\quad x = \frac{14}{9}$ ✓ →

$y = 3\left(\frac{14}{9}\right) - 9$

-4,33 $\quad = -\frac{13}{3}$ ✓ →

(4)

41. $-104; -101; -98; \ldots$

3 3

1. $T_4 = -98 + 3$

$= -95$ ✓ →

(1)

2. $T_n = a + (n-1)d$

$= -104 + (n-1)(3)$

$= -104 + 3n - 3$

$= -107 + 3n$ →

✓ ✓

(2)

3(a) $T_n > 0$

$-107 + 3n > 0$ ✓

$3n > 107$

$n > \frac{107}{3}$

$n > 35,66\ldots$

$\therefore T_{36}$ ✓ →

(2)

ans only 2/2

3(b) $T_n = -107 + 3n$

$T_{36} = -107 + 3(36)$

$= 1$ ✓ →

(1)

4.2. $T_5 = a + 4d$

1: $T_5 = 4 + 4(3)$ ✓
$= 16$

2 $T_5 = a + 4(5)$ ✓
$= a + 20$

$\therefore T_5^1 = T_5^2$
$16 = a + 20$
$-4 = a$ ✓
ans only 3/3 (3)

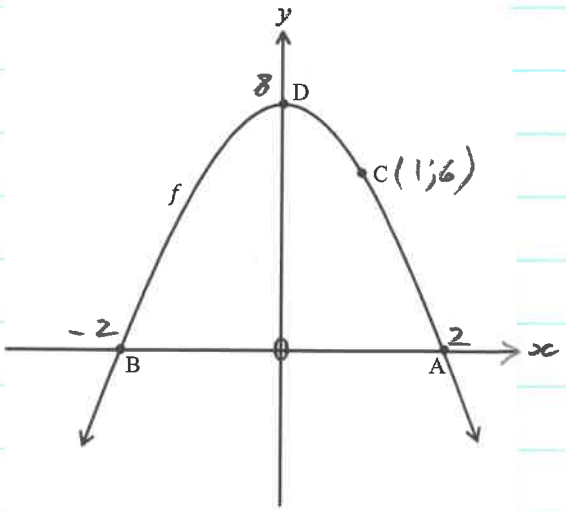
4.3 $x+3;\ 3x+2;\ 6x-1$

✓ NB no brackets ∴ bld

1 $3x+2-(x+3) = 6x-1-(3x+2)$
$3x+2-x-3 = 6x-1-3x-2$
$2x-1 = 3x-3$
$2 = x$ ✓ (2)

2. $T_3 = 6x-1$
$= 6(2)-1$
$= 11$ ✓ (1)

5.



5.1. $x = 0$ ✓ (1)

5.2. $B(-2;0)$ ✓ (1)

5.3 $y = a(x+2)(x-2)$ ✓
sub $C(1;6)$
$6 = a(1+2)(1-2)$ ✓ sub
$6 = -3a$
$-2 = a$

$\therefore y = -2(x+2)(x-2)$
$= -2(x^2-4)$
$= -2x^2+8$ ✓ xout

$\therefore q = 8$ (3)

5.4 $x \in (-\infty; 0)$ ✓ (1)

OR

$x < 0$

5.5.1 $x \in \mathbb{R}$ ✓ (1)

2 $y \in (-\infty; 8]$ ✓ (1)

OR

$y \leq 8$

5.6. $f: \quad y = -2x^2 + 8$

ref x $\quad -y = -2x^2 + 8$

$\quad y = 2x^2 - 8$

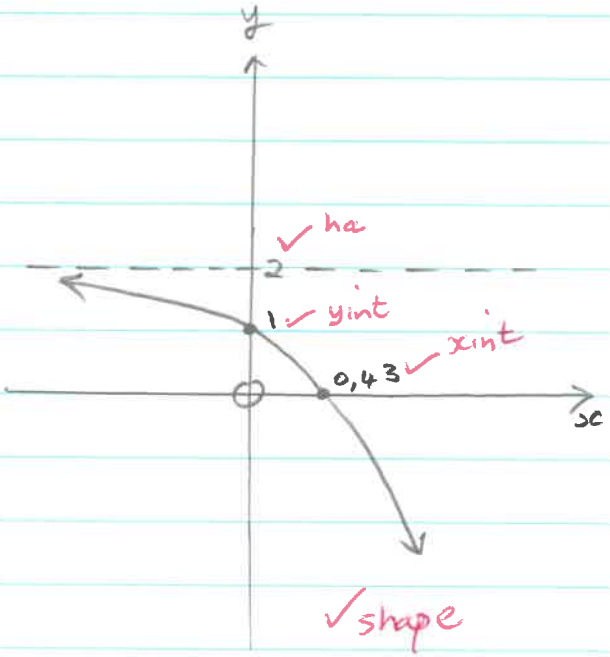
5 ↓ $\quad y = 2x^2 - 8 - 5$

$g: \quad y = 2x^2 - 13$ ✓ ✓ (2)

6. h $\quad y = -5^x + 2$

ie $\quad y = -1.5^x + 2$

- exponential
- y int: $y = -5^0 + 2$
  $= 1$
- x int: $0 = -5^x + 2$
  $5^x = 2$
  $x = \frac{\log 2}{\log 5}$ ✓
  $= 0,43$
- ha: $y = 2$



✓shape

(5)

7. f: $y = -x^2 + 4$

g: $y = -\frac{6}{x} - 3$
$(x < 0)$

7.1 1. $f(-1) = -(-1)^2 + 4$
$= 3$ ✓ (1)

2. $g(-1) = -\frac{6}{-1} - 3$
$= 3$ ✓ (1)

7.2. 1. $x = 0$ ✓ (1)

2. $y = -3$ ✓

7.3. f: $y = -x^2 + 4$

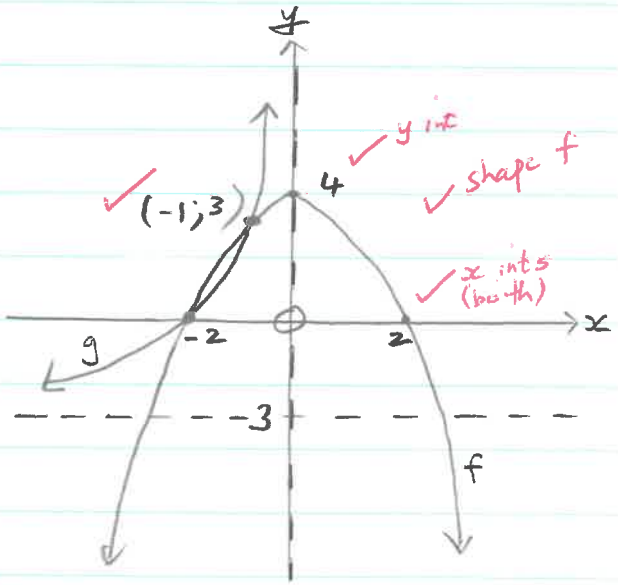
. parabola
. y int: $y = 4$
. x int: $0 = -x^2 + 4$
$x^2 = 4$
$x = \pm\sqrt{4}$
$= \pm 2$
. shape: $a = -$ ↩

g: $y = -\frac{6}{x} - 3$
$(x < 0)$

. hyperbola
. y int: $y = -\frac{6}{0} - 3$
$=$ UD
∴ no y int
. x int: $0 = -\frac{6}{x} - 3$
$\frac{6}{x} = -3$

LD = x $(\because x \neq 0)$
x thru
$6 = -3x$
$-2 = x$

. ha: done
. va: done
. shape: $k = -6$



ha + va ✓
x int + shape ✓
g
6

7.4. $y = -x - 3$ ✓ (1)

7.5. $-x^2 + 4 \leq 0$

$y_f \leq 0$ ✓A

$x \in (-\infty; -2]$ or $[2; \infty)$ (1)

OR

$x \leq -2$ or $x \geq 2$

8.1. 1. $x = \frac{119,88}{999} \times 100$

$= 12\,\%$ ✓ (1)

2. $999 - 119,88$

$= 879,12$ ✓

$A = P(1 + i\,n)$

$= 879,12\left(1 + \frac{8,5}{100} \cdot 2\right)$ ✓

$= 1028,57\ldots$

$\therefore \frac{1028,57\ldots}{24} + 25$ ✓

$= R\ 67,86$ ✓ p m (5)

8.2. $A = P(1+i)^n$

$576\,000 = 385\,000\left(1 + \frac{I}{100}\right)^5$ ✓

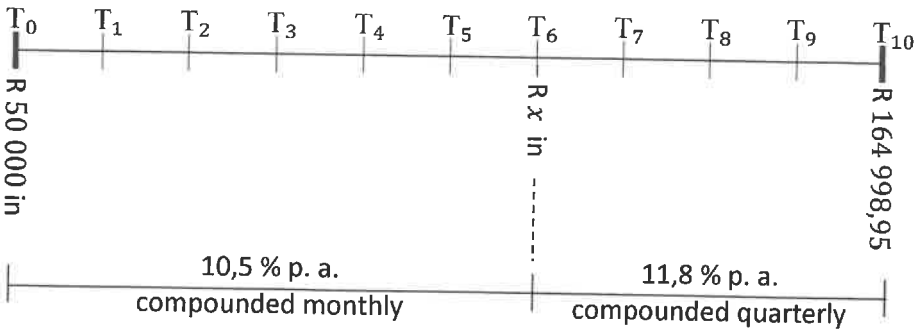
$\frac{576}{385} = \left(1 + \frac{I}{100}\right)^5$

$\sqrt[5]{\frac{576}{385}} = 1 + \frac{I}{100}$ ✓

$1,083\ldots = 1 + \frac{I}{100}$

$8,39\,\% = I$ ✓ (3)

8.3.



$A = P(1+i)^n$

Snowball

$T_0 - T_6$ $A = 50000\left(1+\frac{10,5}{1200}\right)^{6\times12}$ ✓ $= 93\ 623,62\ldots$

$T_6 - T_{10}$ $164\,998,95 = (93\,623,62\ldots + x)\left(1+\frac{11,8}{400}\right)^{4\times4}$ ✓ ✓

$103\ 623,81\ldots = 93\ 623,62\ldots + x$

$10\ 000,18\ldots = x$

$\therefore$ R 10 000 ✓

5

Parallel

50 000 $T_0 - T_6$ $A = 50\,000\left(1+\frac{10,5}{1200}\right)^{6\times12}$ ✓ $= 93\,623,62\ldots$

$T_6 - T_{10}$ $A = 93\,623,62\ldots\left(1+\frac{11,8}{400}\right)^{4\times4}$ ✓

$= 149\,075,76\ldots$

x $T_6 - T_{10}$ $A = x\left(1+\frac{11,8}{400}\right)^{4\times4}$

$= x.\,1,59\ldots$ ✓

$149\,075,76\ldots + x.\,1,59\ldots$ ✓ $= 164\,998,95$

$x.\,1,59\ldots = 15923,18\ldots$

$x = 10\,000,18\ldots$

$\therefore$ R 10 000 ✓

9.1. 1. $P(A \text{ or } B) + P((A \text{ or } B)') = 1$

$P(A \text{ or } B) + 0,05 = 1$

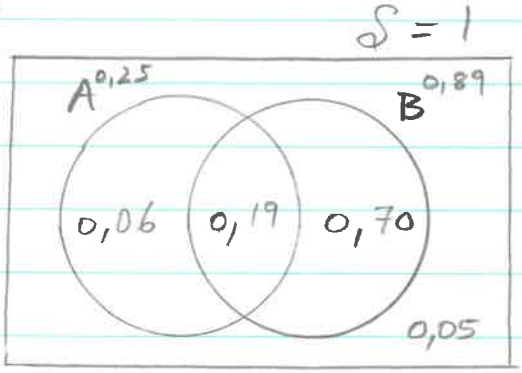
$P(A \text{ or } B) = 0,95$ ✓ (1)

2. $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

$0,95 = 0,25 + 0,89 - P(A \text{ and } B)$ ✓

$P(A \text{ and } B) = 0,19$ ✓ (2)

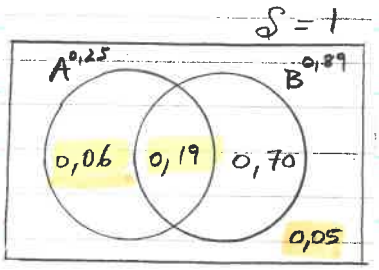
3.



0,06 0,19 0,70 ✓

0,05 S = 1 ✓ (2)

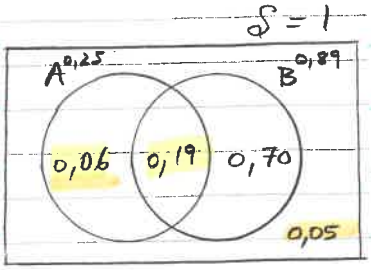
9.1. 4(a)



$P(A \cap B')$

$= 0,06$ ✓ (1)

9.1. 4(b)



$P(A \cup B')$

$= 0,06 + 0,19 + 0,05$

$= 0,30$ ✓ (1)

9.2. 1(a) $P(A \text{ and } B)$

$= 0$ ✓ (1)

1(b) $P(A \text{ or } B)$

$= P(A) + P(B)$ ✓ (1)

2. $P(A \text{ or } B)$

$= 1$ ✓ (1)

9.3. 1. $46 + x = 60$

$x = 14$ ✓ (1)

9 3. 2(a) only one

$= 7 + 9 + 10$

$= 26$ ✓ (1)

2(b) only two

$= 5 + 4 + 3$

$= 12$ ✓ (1)

2(c) ≥ 2

$= 5 + 4 + 3 + 8$

$= 20$ ✓ (1)

9 3. 3 $P(T) = \frac{7 + 4 + 8 + 5}{60}$

$= \frac{24}{60}$ ✓ num

$= \frac{2}{5}$ ✓ ans 0,4

(2)