Grade 11

June Paper 1 Memo 5/6/2026

Question 1:

1.1.1 $x(2x-7) = -3$

$2x^2 - 7x + 3 = 0$ ✓

$(2x-1)(x-3) = 0$ ✓

$x = \frac{1}{2}$ or $x = 3$ ✓ (3)

1.1.2 $x(6x+1) < 12$

$6x^2 + x - 12 < 0$ ✓

$(3x-4)(2x+3) < 0$ ✓

CV $x = \frac{4}{3}$ or $x = -\frac{3}{2}$

$+ \quad 0 \quad - \quad 0 \quad +$

$-3/2 \qquad 4/3$

✓✓ or 0

$-3/2 < x < 4/3$ (4)

1.1.3 $x - \frac{1}{x} = 1$

$x^2 - 1 = x$

$x^2 - x - 1 = 0$ ✓

✓sub

$x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(1)(-1)}}{2(1)}$

$x = 1,62$ or $x = -0,62$

✓ ✓

(4)

1.1.4 $3\sqrt{2-x} + 2x = 5$

$(3\sqrt{2-x})^2 = (5-2x)^2$

$9(2-x) = 25 - 20x + 4x^2$

✓LHS ✓RHS

$18 - 9x = 25 - 20x + 4x^2$

$0 = 4x^2 - 11x + 7$ ✓

$0 = (4x-7)(x-1)$ ✓

$x = \frac{7}{4}$ or $x = 1$ ✓

(5)

1.1.5 $3x^{-7/5} + 4 = 0$

$x^{-7/5} = -\frac{4}{3}$ ✓isolate

$(x^{-7/5})^{-5/7} = (-4/3)^{-5/7}$

$x = -0,81$ ✓

(2)

1.1.6 $x^{\frac{4}{3}} = 7$

$(x^{\frac{4}{3}})^{\frac{3}{4}} = (7)^{\frac{3}{4}}$

$x = \pm 4,30$

1.1.7 $5.2^{2x-1} - 2^{2x} = 4$

$5.2^{2x}.2^{-1} - 2^{2x} = 4$

✓ $2^{2x}(5.2^{-1} - 1) = 4$

$2^{2x}.\frac{3}{2} = 4$

$2^{2x} = 8/3$ ✓

$2x = \frac{\log 8/3}{\log 2}$ ✓log

$x = 0,71$ ✓

(4)

1.2 $6x^2 + 24 - 42x$

✓ $6x^2 - 42x + 24$

$= 6(x^2 - 7x + 4)$

$= 6(x^2 - 7x + \frac{49}{4} - \frac{49}{4} + 4)$ ✓

$= 6(x - \frac{7}{2})^2 - \frac{99}{2}$ ✓

(3)

1.3 $x - 2y = 1$

$x^2 - 2y + 3xy = 6$

$x = 1 + 2y$ ✓

$(1+2y)^2 - 2y + 3(1+2y)y = 6$ ✓

$1 + 4y + 4y^2 - 2y + 3y + 6y^2 - 6 = 0$

$10y^2 + 5y - 5 = 0$

$2y^2 + y - 1 = 0$ ✓

$(2y-1)(y+1) = 0$ ✓

$y = \frac{1}{2}$ or $y = -1$ ✓both

$x = 2$ or $x = -1$ ✓both

(4)

Question 2:

2.1.1 $\frac{\sqrt{50} + \sqrt{8}}{7\sqrt{2}}$ 25.2 4.2

$= \frac{\sqrt{25.2} + \sqrt{4.2}}{7\sqrt{2}}$ ✓

$= \frac{5\sqrt{2} + 2\sqrt{2}}{7\sqrt{2}}$ ✓num

$= \frac{7\sqrt{2}}{7\sqrt{2}}$ (3)

$= 1$ ✓ans

2.1.2 $\frac{(3-\sqrt{3})^2}{\sqrt{3}.\sqrt{6}}$

$= \frac{9 - 6\sqrt{3} + 3}{\sqrt{3}.\sqrt{3}.\sqrt{2}}$

$= \frac{12 - 6\sqrt{3}}{3\sqrt{2}}$ ✓num ✓den

$= \frac{12 - 6\sqrt{3}}{3\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$ ✓

$= \frac{12\sqrt{2} - 6\sqrt{2}.\sqrt{3}}{6}$

$= \frac{6\sqrt{2}(2 - \sqrt{3})}{6}$

$= 2\sqrt{2} - \sqrt{2}.\sqrt{3}$

$= 2\sqrt{2} - \sqrt{6}$ (5)

✓ ✓

2.2.1 $$\frac{4^{x-1}+4^{2x+1}}{17.12^x}$$

$$= \frac{(2^2)^{x-1}+(2^2)^{2x+1}}{17(2^2.3)^x}$$

$$= \frac{2^{2x-2}+2^{2x+2}}{17.2^{2x}.3^x}$$ ✓pb

$$= \frac{2^{2x}.2^{-2}+2^{2x}.2^2}{17.2^{2x}.3^x}$$ ✓a

$$= \frac{2^{2x}(2^{-2}+2^2)}{17.2^{2x}.3^x}$$

$$= \frac{\frac{1}{4}+4}{17.3^x}$$

$$= \frac{17/4}{17}.3^{-x}$$

$$= \frac{1}{4}.3^{-x}$$ (4)

✓ ✓

2.2.2 $\frac{1}{4}.4t$

$= t$ ✓ (1)

Question 3:

3.1 $8x^2 = 2x + 1$

$8x^2 - 2x - 1 = 0$

$\Delta = b^2 - 4ac$ ✓

$= (-2)^2 - 4(8)(-1)$

$= 36$ ✓ ✓

Real, rational, unequal ✓ all (3)

3.2 $mx^2 - m - x^2 = -2x - 3$

$mx^2 - x^2 + 2x - m + 3 = 0$

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

$\Delta = (2)^2 - 4(m-1)(-m+3)$ ✓

$= 4 + 4m^2 - 16m + 12$

$= 4m^2 - 16m + 16$ ✓

$= 4(m^2 - 4m + 4)$ ✓

$= 4(m-2)^2$ ✓

$(m-2)^2 \geq 0$ } x4

$4(m-2)^2 \geq 0$ } ✓

$\Delta \geq 0$ (5)

root are real

3.3 $x^2 - 2 = x + k$

$x^2 - x - 2 - k = 0$ ✓

$\Delta = (-1)^2 - 4(1)(-2-k)$ ✓

$= 1 + 8 + 4k$

$= 4k + 9$ ✓

tangente $\Delta = 0$

$4k + 9 = 0$ (4)

$k = -9/4$ ✓

Question 4:

4.1 $-7; 0; 9; 20$

$\quad 7 \quad 9 \quad 11$

$\quad\quad 2 \quad 2$

$2a = 2$ $\quad 3a + b = 7$

$a = 1$ ✓ $\quad 3(1) + b = 7$

$b = 4$ ✓

$a + b + c = -7$

$1 + 4 + c = -7$

$c = -12$ ✓ (3)

$\therefore T_n = n^2 + 4n - 12$

4.2 $128 = n^2 + 4n - 12$ ✓

$0 = n^2 + 4n - 140$ ✓

$0 = (n-10)(n+14)$ ✓

$n = 10$ or $n \neq -14$

✓ ans with selection; reject

(4)

4.3 $T_n = 2n + 5$

✓ ✓ (2)

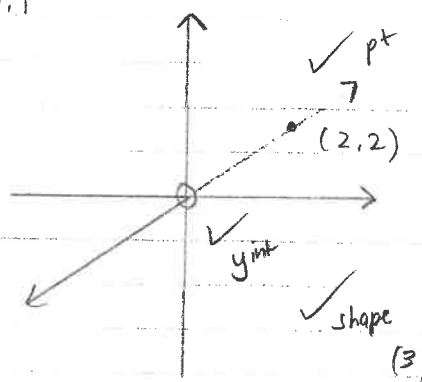
4.4 $2009 = 2n + 5$ ✓

$n = 1002$ ✓

$\therefore T_{1002}$ and T_{1003} ✓ (3)

Question 5:

5.1



(3)

5.2 $y = 0$ ✓ (1)

5.3 $A(-1;4)$
$B(7;-1)$

$m = \frac{4-(-1)}{-1-7}$

$= -\frac{5}{8}$ ✓

$y = -5/8\,x + c$
sub $A(-1;4)$

$4 = -5/8(-1) + c$ ✓sub
$c = 27/8$

$\therefore y = -5/8x + 27/8$ ✓

$8y = -5x + 27 \quad (\times 8)$

$\therefore 5x + 8y - 27 = 0$ ✓

(4)

5.4.1 ✓A

(a) $x \in [-5; \infty)$ (1)

(b) $f(x) - g(x) < 0$
$f(x) < g(x)$

$x \in (-\infty; 1)$ (2)
✓interval ✓notation

(c) $(mx+c)(nx+d) > 0$
$f(x).g(x) > 0$

$x \in (-5; 4)$ (2)
✓int ✓notation

(d) $x.g(x) \leq 0$

$x \in (-\infty; 0]$ or
✓A

$x \in [4; \infty)$ (2)
✓A

5.4.2 $x \in \mathbb{R}$ (1)

Question 6:

6.1.1 $f: y = \frac{3}{x} - 2$

$0 = \frac{3}{x} - 2$
$2 = 3/x$
$2x = 3$
$x = 3/2$

A: $(3/2 \;.\; 0)$ ✓ ✓ (2)

6.1.2 $y = -2$ ✓ (1)

6.1.3 $x = 0$ ✓ (1)

6.1.4 $y = -x - 2$ ✓ ✓ (2)

6.1.5 $y \in \mathbb{R};\ y \neq -2$ ✓ ✓ (2)

6.2

6.2.1 $f(x) \geq 0$ CA 6.1.1

$x \in (0; 3/2]$
✓interval ✓notation
(2)

6.2.2 $f(x) + 2 < 0$
$f(x) < -2$

$x \in (-\infty; 0)$ (1)
✓A

6.3 $y = \frac{3}{x} - 2$

$-y = \frac{3}{x} - 2$ ✓
$y = -\frac{3}{x} + 2$ ✓
$y = -\frac{3}{x} + 5$ ✓

(3)

6.4 $y = -\frac{3}{x} - 2$ ✓ (1)