Grade 10 June Exam 2026 /100

1.1. $1000x = 7234,234\ldots$

$x = 7,234\ldots$

$999x = 7227$

$x = \frac{7227}{999}$

$= \frac{803}{111}$ (3)

1.2.

64	67	125
$\sqrt[3]{64}$	$\sqrt[3]{67}$	$\sqrt[3]{125}$
4	$\sqrt[3]{67}$	5

$\therefore$ 4 and 5 (2)

ao o/z

1.3. $\sqrt{19-3x}$ $\mathbb{R}$

$19 - 3x \geq 0$

$-3x \geq -19$

$x \leq \frac{19}{3}$ (2)

2.1. 1. $(2x-3)(2x+3)(4x^2-6x+9)(4x^2+6x+9)$

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

$= (8x^3-27)(8x^3+27)$

$= 64x^6 - 729$ (3)

2.1. 2. $(x^{\frac{1}{2}} - x^{-\frac{1}{2}})(x^{\frac{1}{2}} - x^{\frac{1}{2}})$

$= x - 2 + x^{-1}$ (2)

2.2. 1. $\frac{2x-3}{5} - \frac{3x-2}{10}$

$= \frac{(2x-3).2 - (3x-2)}{10}$

$= \frac{4x - 6 - 3x + 2}{10}$

$= \frac{x-4}{10}$ (2)

(1)

2.2 2. $\frac{\frac{x}{y} - \frac{25y}{x}}{\frac{5y}{x} - \frac{1}{x}}$

$= \frac{\frac{x.x - 25y.y}{xy}}{\frac{5y.1 - 1.x}{x^2}}$

$= \frac{\frac{x^2 - 25y^2}{xy}}{\frac{5y - x}{x^2}}$ } both

$= \frac{(x-5y)(x+5y)}{xy} \times \frac{x^2}{5y-x}$

$= \frac{(x-5y)(x+5y)}{xy} \times \frac{x^2}{-(x-5y)}$

$= -\frac{x(x+5y)}{y}$ (4)

2.2. 3. $\frac{11.2^x}{2^{x+2} + 3.2^{x-1}}$

$= \frac{11.2^x}{2^x 2^2 + 3.2^x.2^{-1}}$

$= \frac{11.2^x}{2^x(2^2 + 3.2^{-1})}$

$= \frac{11.2^x}{2^x(4 + \frac{3}{2})}$

$= \frac{11}{\frac{11}{2}}$

$= 11 \times \frac{2}{11}$

$= 2$ (3)

2.3. 1. $2x + 24 - 12x^2$

$= -12x^2 + 2x + 24$

$= -2(6x^2 - x - 12)$

$= -2(2x-3)(3x+4)$ (2)

2.3. 2. $\frac{1}{2}x^3 - 4$

$= \frac{1}{2}(x^3 - 8)$

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

2.3. 3. $y^2 - 6y - x^2 + 9$

$= y^2 - 6y + 9 - x^2$

$= (y-3)^2 - x^2$

$= [(y-3) - x][(y-3) + x]$

$= (y-3-x)(y-3+x)$ (3)

2.3. 4. $2.3^{2x+1} - 3^x - 2$

$= 2.3^{2x}.3 - 3^x - 2$

$= 6.3^{2x} - 3^x - 2$

$k = 3^x \quad (k)^2 = (3^x)^2$

$k^2 = 3^{2x}$

$\therefore 6k^2 - k - 2$

$= (3k-2)(2k+1)$

$= (3.3^x - 2)(2.3^x + 1)$ (2)

(2)

2.3. 5. $3^x - 3^{-x}$

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

$k = 3^x$

$k - \frac{1}{k}$

$= \frac{k^2 - 1}{k}$ ✓

$= \frac{(k-1)(k+1)}{k}$

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

2.3. 6. $-7x^{-\frac{3}{4}} + 6x^{-\frac{3}{2}} - 20$

$= 6x^{-3/2} - 7x^{-\frac{3}{4}} - 20$

$k = x^{-\frac{3}{4}}$ $(k)^2 = (x^{-\frac{3}{4}})^2$

$= x^{-3/2}$

$\therefore 6k^2 - 7k - 20$

$= (2k - 5)(3k + 4)$ ✓

$= (2x^{-3/4} - 5)(3x^{-3/4} + 4)$ (1)

(3)

3.1. 1. $x^2 = 7x$

$x^2 - 7x = 0$ ✓

$x(x-7) = 0$ ✓

$x = 0$ or 7 ✓ (3)

3.1. 2. $2(x-3)^2 = 112$

$(x-3)^2 = 56$ ✓

$x - 3 = \pm\sqrt{56}$ ✓

$x - 3 = \sqrt{56}$ or $x - 3 = -\sqrt{56}$

$x = 10,48$ ✓ $x = -4,48$ ✓ (4)

$2x^2 - 12x + 18 = 112$

$2x^2 - 12x - 94 = 0$

$\div 2$: $x^2 - 6x - 47 = 0$ ✓

$x = 10,48$ or $-4,48$ ✓ 2/4

3.1. 3. $3.5^{-4x+7} = 8$

$5^{-4x+7} = \frac{8}{3}$ ✓

$-4x + 7 = \frac{\log \frac{8}{3}}{\log 5}$ ✓ logs

$= 0,60\ldots$

$\therefore x = 1,60$ ✓ (3)

3.1. 4. $4x^{\frac{3}{5}} + 7 = 0$

isolate

$x^{\frac{3}{5}} = -\frac{7}{4}$ ✓

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

$x = -2,54$ ✓ (2)

3.1. 5. $(x^{4/3})^{\frac{3}{4}} = \pm(5)^{3/4}$

$x = \pm 3,34$ ✓ (1)

3.1. 6. $(x^{\frac{1}{4}})^4 = (-5)^4$

$x = 625$

reject

$\therefore$ no soln ✓ (1)

3.1. 7. $\frac{x}{a} - 1 = 1 - \frac{x}{b}$

LCD $= ab$

$(\because a \neq 0$ or $b \neq 0)$

$\times$ thru

$xb - ab = ab - xa$ ✓

$xb + xa = 2ab$

$x(b+a) = 2ab$ ✓ cf

$x = \frac{2ab}{b+a}$ ✓

(3)

(4)

3.2. 1. $-3 \leq -2x + 3 < 11$

-3: $-6 \leq -2x < 8$ ✓

$\div -2$: $3 \geq x > -4$ ✓ (2)

3.2 2(a)

✓ (1)

3.2. 2(b) $x \in (-4; 3]$ ✓ (1)

3.3. $4x + y = -5$ ... 1 $\quad 3x + 4y = 19$ ... 2

(1): $y = -5 - 4x$ ✓

(2): $3x + 4(-5 - 4x) = 19$ ✓

$3x - 20 - 16x = 19$

$-39 = 13x$

$-3 = x$ ✓

$y = -5 - 4(-3)$

$= 7$ ✓ (4)

4.1. $8; 3; -2; \ldots; -492$

$-5 \quad -5$

4.1.1 $T_n = a + (n-1)d$

$= 8 + (n-1)(-5)$

$= 8 + (-5n + 5)$

$= 8 - 5n + 5$

$= -5n + 13$ (2)

4.1.2. $T_{22} = -5(22) + 13$

$= -97$ (2)

4.1.3. $-492 = -5n + 13$

$-505 = -5n$

$101 = n$ (2)

4.2. $y^2 - 2y; 2y^2 + 4y; 4y^2 - 24$

$2y^2 + 4y - (y^2 - 2y)$

$= 2y^2 + 4y - y^2 + 2y$

$= y^2 + 6y$

$4y^2 - 24 - (2y^2 + 4y)$

$= 4y^2 - 24 - 2y^2 - 4y$

$= 2y^2 - 4y - 24$

arithmetic

$\therefore y^2 + 6y = 2y^2 - 4y - 24$

$0 = y^2 - 10y - 24$

$= (y - 12)(y + 2)$

$\therefore y = 12$ or -2 (4)

Check:

$y = 12$: 120; 336; 552

ok

$y = -2$: 8; 0; -8

ok

(5)

5.1.1. $\frac{\tan 100°}{\cos 67° - 8}$

$= 0,75$ (1)

5.1.2. $5 \operatorname{Cosec} 100°$

$= 5 \frac{1}{\sin 100°}$

$= 5,08$ (1)

5.1.3. $3(\sin(4(100° + 10°)))^2$

$= 2,91$ (1)

5.2.1. $\frac{\sin 2x}{5} = \frac{\sin 15°}{7}$

$A = 2x$

$\frac{\sin A}{5} = \frac{\sin 15°}{7}$

$\sin A = 0,18\ldots$

$A = \sin^{-1}(0,18\ldots)$

$A = 10,65\ldots°$

$2x = 10,65\ldots°$

$x = 5,33°$ (3)

5.2.2. $5^2 = 6^2 + 7^2 - 2.6.7\cos x$

$-60 = -84\cos x$

$\frac{5}{7} = \cos x$

$x = \cos^{-1}\left(\frac{5}{7}\right)$

$= 44,42°$ (2)

(6)

5.2.3. $\frac{2}{3}\sec x = \sin 70°$

$\sec x = 1,40\ldots$

$\frac{1}{\cos x} = 1,40\ldots$

$\times \cos x: \quad 1 = \cos x \cdot 1,40\ldots$

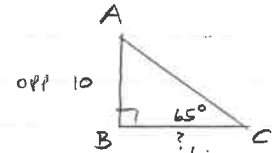
$\frac{1}{1,40\ldots} = \cos x$

$0,70\ldots = \cos x$

$x = \cos^{-1}(0,70\ldots)$

$= 44,81°$ (3)

5.3.

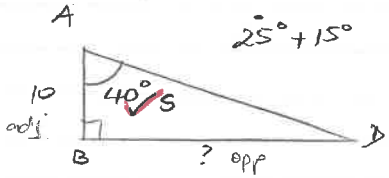


$\tan 65° = \frac{10}{BC}$ $\frac{\text{opp}}{\text{adj}}$

$BC \cdot \tan 65 = 10$

$BC = \frac{10}{\tan 65°}$

$= 4,16\ldots$



• sum ∠'s in $\Delta ABC = 180°$

$\tan 40° = \frac{BD}{10}$

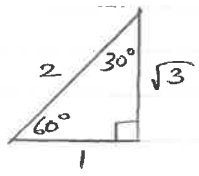
$10 \cdot \tan 40° = BD$

$8,39\ldots = BD$

$\therefore CD = 8,39\ldots - 4,66\ldots$

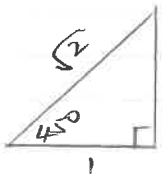
$= 3,73$ m (6)

6.1. 1.



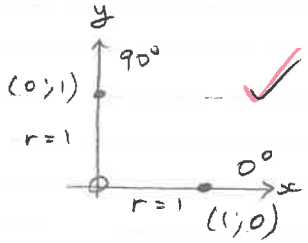
✓ ✓ (1)

6.1. 2.



✓ ✓ (1)

6.1. 3.



✓ ✓ (1)

6.2 1. $\tan 30° = \frac{o}{a}$ ✓

$= \frac{1}{\sqrt{3}}$ ✓ (1)

6.2. 2. $\cos 45° = \frac{a}{h}$ ✓

$= \frac{1}{\sqrt{2}}$ ✓ (1)

6.2. 3. $\sec 0° = \frac{r}{x}$

$= \frac{1}{1}$ ✓

$= 1$ (1)

6.3. $2\tan\theta + 1 = 0$ $\tan\theta = -\frac{1}{2}$

$\sin\theta > 0$ $\sin\theta$ +

6.3. 1. $\tan\theta$ = −

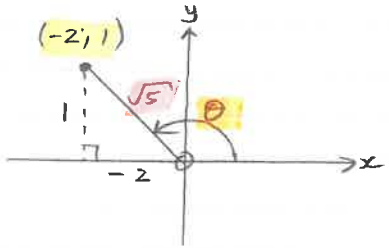
∴ Q II IV ✓

$\sin\theta$ = +

∴ Q I II ✓

∴ Q II (2)

6.3. 2 $\tan\theta = -\frac{1}{2}$ $\frac{y}{x}$ $\frac{1}{-2}$



$r^2 = (1)^2 + (-2)^2$ Pythag

$= 5$

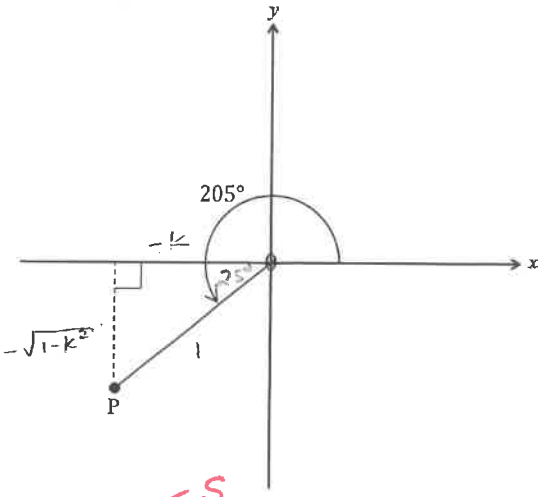
$r = \sqrt{5}$

x, y ✓

θ r ✓ (2)

(7)

6.4.1. $\cos 205° = -k$ $\frac{x}{r}$ $\frac{-k}{1}$



∠'s on str line = 180

$(-k)^2 + y^2 = (1)^2$ ✓S Pythag

$y^2 = 1 - k^2$

$y = \pm\sqrt{1-k^2}$ reject +

$= -\sqrt{1-k^2}$

∴ $P(-k; -\sqrt{1-k^2})$ ✓ ✓ (3)

6.4 2(a) $\sin 205° = \frac{y}{r} = \frac{-\sqrt{1-k^2}}{1}$ ✓

$= -\sqrt{1-k^2}$ (1)

6.4. 2(b) $\cos 25° = \frac{a}{h} = \frac{k}{1}$ ✓

$= k$ (1)

(8)