

Memo Grade 10 Maths Exam 2013

1.1) $\frac{3 - \sqrt{17}}{2}$ \mathbb{R} \mathbb{Q} \mathbb{Z}
 \mathbb{Y} \mathbb{N} \mathbb{N} ✓

2.1) $x = 2$ ✓

2.2) $x > 4$ ✓ any one number.

3) No x value. ✓

2.4) $x = 4$ ✓

1.3 $\sqrt[3]{27} < \sqrt[3]{35} < \sqrt[3]{64}$ ✓
 $3 < \sqrt[3]{35} < 4$ ✓

1.4) $x = 1,2\dot{8}$
 $100x = 128,2\dot{8}$

$100x - x = 128,2\dot{8} - 1,2\dot{8}$ ✓

$99x = 127$

$x = \frac{127}{99}$ ✓

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Question 2

$$2.1.1) 4x^2 - 12x + 9$$
$$= 4x^2 - 9$$

$$2.1.2) 8a^3 - 27a^3$$

$$2.1.3) n^{8p} - 2n^{4p} + 1$$

8

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

$$d = -1$$

Question 3

$$3.1) \quad 4(x^2 - 9) \quad \checkmark$$

$$4(x-3)(x+3) \quad \checkmark$$

$$3.2) \quad \frac{1}{4}(64x^3 + y^3) \quad \checkmark$$

$$\frac{1}{4}(4x+y)(16x^2 - 4xy + y^2) \quad \checkmark$$

$$3.3) \quad 6a^2(m-n) + 5a(m-n) + (m-n) \quad \checkmark$$

$$(m-n)(6a^2 + 5a + 1) \quad \checkmark$$

$$= (m-n)(3a+1)(2a+1) \quad \checkmark$$

$$3.4) \quad x^2(2x+1) - 3(2x+1) \quad \checkmark$$

$$(2x+1)(x^2 - 3) \quad \checkmark$$

$$3.5) \quad 3^n(1 + 3^2) \quad \checkmark$$

$$3^n(10) \quad \checkmark$$

$$3.6) \quad (3 \cdot 5^x - 4)(2 \cdot 5^x + 3)$$

✓
 ✓ no's including sign
 ✓ variables

$$3.7) \quad (x^{\frac{1}{4}} - 3)(x^{\frac{1}{4}} - 2)$$

✓ $x^{\frac{1}{4}}$
 ✓ no's and signs

Question 4

$$4.1) \frac{(2^2 \cdot 3)^x \cdot (3)^{2x+1}}{(2)^{2x-1} \cdot 3^{2x}}$$

✓ prime factors

$$= \frac{2^{2x} \cdot 3^x \cdot 3^{2x+1}}{2^{2x-1} \cdot 3^{2x}}$$

✓ remove brackets

$$= 3^2 \cdot 2^2 \quad \text{or } 36 \quad \checkmark$$

$$4.2) \frac{2(3a+1) - (2a-1)}{10}$$

$$\frac{6a+2 - 2a+1}{10}$$

$$= \frac{4a+3}{10} \quad \checkmark \checkmark$$

$$4.3) \frac{y\sqrt{x}}{xy} \times \frac{y\sqrt{x}}{y-x}$$

✓ x cancelled

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

Question 5

$$5.1) \quad x(x-4) = 0$$

$$x = 0 \quad \text{or} \quad x = 4$$

$$5.2) \quad 3x(x-1) = (x+2)(x+2)$$

$$x \neq 0 \quad x \neq -2$$

$$3x^2 - 3x = x^2 + 4x + 4$$

$$2x^2 - 7x - 4 = 0$$

$$(2x+1)(x-4) = 0$$

$$x = -\frac{1}{2} \quad \text{or} \quad x = 4$$

$$5.3) \quad 4x^2 - 10x - 6 = 0$$

$$2x^2 - 5x - 3 = 0$$

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

$$x = -\frac{1}{2} \quad \text{or} \quad x = 3$$

$$5.4) \quad x^2 = \frac{3}{2}$$

$$x = \pm \sqrt{\frac{3}{2}}$$

$$x = \pm 1,22$$

$$5.5) \quad 2^x = -1$$

or

$$2^x = 3$$

No solution

$$x \log 2 = \log 3$$

$$x = \frac{\log 3}{\log 2}$$

$$x = 1,58$$

$$5.6) \quad x^{-3/2} = \frac{7}{4}$$

$$x = \left(\frac{7}{4}\right)^{-2/3}$$

$$x = 0,69$$

Question 6

6.1.1) $4 \leq -2x \leq 10$ ✓

$-27 \leq x \leq -5$ ✓

6.1.2) $x \in (-5; -2]$ ✓

extending both

6.1.3



6.2) $2x = 3y + 5$ ②

$x + 2y = 4$

$x = 4 - 2y$ ① ✓

sub ① into ②

$2(4 - 2y) = 3y + 5$ ✓

$8 - 4y = 3y + 5$

$y = \frac{3}{7}$ ✓

$x = 4 - 2\left(\frac{3}{7}\right)$

$x = \frac{22}{7}$ ✓

$2x - 3y = 5 \quad \times 2$

$3x + 6y = 12$

$4x - 6y = 10$

+ $3x + 6y = 12$ ✓

$7x = 22$ ✓

$x = \frac{22}{7}$ ✓

$2\left(\frac{22}{7}\right) - 3y = 5$

$y = \frac{3}{7}$ ✓

⑨

Question 7

$$7.1.1) T_n = a + (n-1)d$$

$$T_n = 7 + (n-1)12$$

$$T_n = 12n - 5$$

$$7.1.2) 475 = 12n - 5$$

$$480 = 12n$$

$$40 = n$$

$$7.2) 2x+1 - (2x-5) = 4x+3 - (2x+1)$$

$$6 = 2x - 2$$

$$x = 2$$

Question 8

8.1.1) 0,91 ✓

8.1.2) 1,72 ✓

8.1.3) 10,90 ✓

8.2.1) $\hat{A} = 60^\circ$

8.2.2) $\hat{A} = 10,72$

8.2.3) $\cos 4(A-10^\circ) = \frac{\sqrt{3}}{2}$ ✓

$4(A-10) = 150$ ✓

$A-10 = 37,5^\circ$ ✓

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Question 9

$$9.1) \cos C = \frac{BC}{CD} \quad \text{in } \triangle BCD \quad \checkmark$$

$$\cos C = \frac{CD}{AC} \quad \text{in } \triangle ACD \quad \checkmark$$

$$9.2.1) \sin 36 = \frac{x}{3,4} \quad \checkmark \checkmark$$
$$x = 2$$

$$9.2.2) \cos \alpha = \frac{14}{22,4} \quad \checkmark$$
$$\alpha = 51,32 \quad \checkmark$$

$$9.3 \quad \tan 22,2 = \frac{28,43}{BP} \quad \checkmark$$
$$BP = \frac{28,43}{\tan 22,2} \quad \checkmark$$
$$BP = 69,67 \quad \checkmark$$

IC

$$\text{Distance AB} = 29,67 \quad \checkmark$$