



Grade 12 Mathematics

Algebra

Revision Questions

NOV 2025

QUESTION 1

1.1 Solve for x :

1.1.1 $(x + 5)(x - 2) = 0$ (2)

1.1.2 $5x^2 + 2 = -9x$ (correct to TWO decimal places) (4)

1.1.3 $8x^2 > 2x$ (4)

1.1.4 $2 \cdot 2^{2x} - 9 \cdot 2^x + 4 = 0$ (4)

1.1.5 $\sqrt{\sqrt{\frac{1}{x}} + 2} = \frac{1}{\sqrt{x}}$ (5)

1.2 Calculate the values of x and y if:

- x is the sum of 2 and y
 - Five times the product of x and y is 6 more than the square of x
- (6)

[25]

NOV 2024

QUESTION 1

1.1 Solve for x :

1.1.1 $x(x - 3) = 0$ (2)

1.1.2 $2x^2 + 1 = 4x$ (correct to TWO decimal places) (4)

1.1.3 $x^2 - 2x - 3 > 0$ (4)

1.1.4 $2^{2x} - 2^{x+2} - 32 = 0$ (5)

1.1.5 $\sqrt{-2x + 4} - x = 2$ (4)

1.2 Solve for x and y simultaneously:

$$2x + y = 3$$

$$y^2 + xy = 2$$
 (5)

1.3 Consider the product $\left(1 + \frac{1}{2}\right)\left(1 + \frac{1}{3}\right)\left(1 + \frac{1}{4}\right) \dots$

Each factor in the product is of the form $\left(1 + \frac{1}{n}\right)$ for $n \geq 2$.

Determine ALL the values of n for which the product will be an integer value. (3)

[27]

NOV 2023

QUESTION 1

1.1 Solve for x :

1.1.1 $x^2 + x - 12 = 0$ (3)

1.1.2 $3x^2 - 2x = 6$ (answers correct to TWO decimal places) (4)

1.1.3 $\sqrt{2x+1} = x-1$ (4)

1.1.4 $x^2 - 3 > 2x$ (4)

1.2 Solve for x and y simultaneously:

$x + 2 = 2y$ and $\frac{1}{x} + \frac{1}{y} = 1$ (5)

1.3 Given: $2^{m+1} + 2^m = 3^{n+2} - 3^n$ where m and n are integers.

Determine the value of $m + n$. (4)
[24]

NOV 2022

QUESTION 1

1.1 Solve for x :

1.1.1 $(3x - 6)(x + 2) = 0$ (2)

1.1.2 $2x^2 - 6x + 1 = 0$ (correct to TWO decimal places) (3)

1.1.3 $x^2 - 90 > x$ (4)

1.1.4 $x - 7\sqrt{x} = -12$ (4)

1.2 Solve for x and y simultaneously:

$2x - y = 2$
 $xy = 4$ (5)

1.3 Show that $2 \cdot 5^n - 5^{n+1} + 5^{n+2}$ is even for all positive integer values of n . (3)

1.4 Determine the values of x and y if: $\frac{3^{y+1}}{32} = \sqrt{96^x}$ (4)
[25]

QUESTION 1

1.1 Solve for x :

1.1.1 $x^2 - 2x - 24 = 0$ (3)

1.1.2 $2x^2 - 3x - 3 = 0$ (correct to TWO decimal places) (3)

1.1.3 $x^2 + 5x \leq -4$ (4)

1.1.4 $\sqrt{x+28} = 2-x$ (4)

1.2 Solve simultaneously for x and y in:

$2y = 3 + x$ and $2xy + 7 = x^2 + 4y^2$ (6)

1.3 The roots of an equation are $x = \frac{-n \pm \sqrt{n^2 - 4mp}}{2m}$ where m , n and p are positive real numbers. The numbers m , n and p , in that order, form a geometric sequence. Prove that x is a non-real number. (4)
[24]

QUESTION 1

1.1 Solve for x :

1.1.1 $x^2 - 6x = 0$ (2)

1.1.2 $x^2 + 10x + 8 = 0$ (correct to TWO decimal places) (3)

1.1.3 $(1-x)(x+2) < 0$ (3)

1.1.4 $\sqrt{x+18} = x-2$ (5)

1.2 Solve simultaneously for x and y :

$x + y = 3$ and $2x^2 + 4xy - y = 15$ (6)

1.3 If n is the largest integer for which $n^{200} < 5^{300}$, determine the value of n . (3)
[22]

QUESTION 1

1.1 Solve for x :

1.1.1 $x^2 + 5x - 6 = 0$ (3)

1.1.2 $4x^2 + 3x - 5 = 0$ (correct to TWO decimal places) (3)

1.1.3 $4x^2 - 1 < 0$ (3)

1.1.4 $\left(\sqrt{\sqrt{32} + x}\right)\left(\sqrt{\sqrt{32} - x}\right) = x$ (4)

1.2 Solve simultaneously for x and y :

$y + x = 12$ and $xy = 14 - 3x$ (5)

1.3 Consider the product $1 \times 2 \times 3 \times 4 \times \dots \times 30$.Determine the largest value of k such that 3^k is a factor of this product. (4)
[22]

QUESTION 1

1.1 Solve for x :

1.1.1 $x^2 - 4x + 3 = 0$ (3)

1.1.2 $5x^2 - 5x + 1 = 0$ (correct to TWO decimal places) (3)

1.1.3 $x^2 - 3x - 10 > 0$ (3)

1.1.4 $3\sqrt{x} = x - 4$ (4)

1.2 Solve simultaneously for x and y :

$3x - y = 2$ and $2y + 9x^2 = -1$ (6)

1.3 If $3^{9x} = 64$ and $5^{\sqrt{p}} = 64$, calculate, WITHOUT the use of a calculator,the value of: $\frac{[3^{x-1}]^3}{\sqrt{5}^{\sqrt{p}}}$ (4)
[23]

QUESTION 1

1.1 Solve for x :

$$1.1.1 \quad x^2 + 9x + 14 = 0 \quad (3)$$

$$1.1.2 \quad 4x^2 + 9x - 3 = 0 \quad (\text{correct to TWO decimal places}) \quad (4)$$

$$1.1.3 \quad \sqrt{x^2 - 5} = 2\sqrt{x} \quad (4)$$

1.2 Solve for x and y if:

$$3x - y = 4 \quad \text{and} \quad x^2 + 2xy - y^2 = -2 \quad (6)$$

1.3 Given: $f(x) = x^2 + 8x + 16$

$$1.3.1 \quad \text{Solve for } x \text{ if } f(x) > 0. \quad (3)$$

$$1.3.2 \quad \text{For which values of } p \text{ will } f(x) = p \text{ have TWO unequal negative roots?} \quad (4)$$

[24]

NOV 2016

QUESTION 1

1.1 Solve for x :

$$1.1.1 \quad x(x - 7) = 0 \quad (2)$$

$$1.1.2 \quad x^2 - 6x + 2 = 0 \quad (\text{correct to TWO decimal places}) \quad (3)$$

$$1.1.3 \quad \sqrt{x-1} + 1 = x \quad (5)$$

$$1.1.4 \quad 3^{x+3} - 3^{x+2} = 486 \quad (4)$$

1.2 Given: $f(x) = x^2 + 3x - 4$

$$1.2.1 \quad \text{Solve for } x \text{ if } f(x) = 0 \quad (2)$$

$$1.2.2 \quad \text{Solve for } x \text{ if } f(x) < 0 \quad (2)$$

$$1.2.3 \quad \text{Determine the values of } x \text{ for which } f'(x) \geq 0 \quad (2)$$

$$1.3 \quad \text{Solve for } x \text{ and } y: \quad x = 2y \quad \text{and} \quad x^2 - 5xy = -24 \quad (4)$$

[24]

QUESTION 1

1.1 Solve for x :

1.1.1 $x^2 - 9x + 20 = 0$ (3)

1.1.2 $3x^2 + 5x = 4$ (correct to TWO decimal places) (4)

1.1.3 $2x^{\frac{-5}{3}} = 64$ (4)

1.1.4 $\sqrt{2-x} = x-2$ (4)

1.1.5 $x^2 + 7x < 0$ (3)

1.2 Given: $(3x-y)^2 + (x-5)^2 = 0$

Solve for x and y . (4)

1.3 For which value of k will the equation $x^2 + x = k$ have no real roots? (4)
[26]

QUESTION 1

1.1 Solve for x :

1.1.1 $(x-2)(4+x) = 0$ (2)

1.1.2 $3x^2 - 2x = 14$ (correct to TWO decimal places) (4)

1.1.3 $2^{x+2} + 2^x = 20$ (3)

1.2 Solve the following equations simultaneously:

$x = 2y + 3$

$3x^2 - 5xy = 24 + 16y$ (6)

1.3 Solve for x : $(x-1)(x-2) < 6$ (4)

1.4 The roots of a quadratic equation are: $x = \frac{3 \pm \sqrt{-k-4}}{2}$
For which values of k are the roots real? (2)
[21]

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