

GRADE 12 INFORMAL TEST 1 ANSWERS

GO THROUGH
YOUR TEST 1 AND
MARK ACCORDING
TO MEMO
PROVIDED BELOW.

THE ANSWERS
FOLLOW EACH
QUESTION.

QUESTION 1

1.1 Solve for x :

1.1.1 $x^2 - x - 20 = 0$ (2)

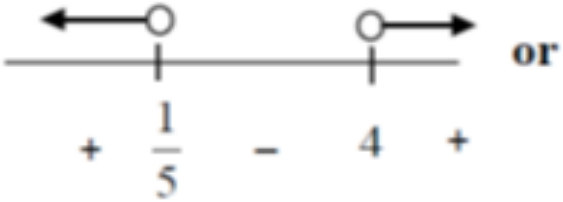
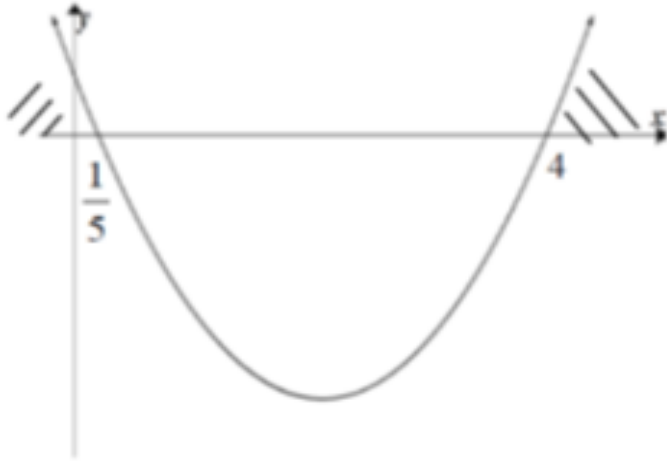
1.1.2 $2x^2 - 11x + 7 = 0$ (correct to TWO decimal places) (3)

1.1.3 $5x^2 + 4 > 21x$ (5)

1.1.4 $2^{2x} - 6 \cdot 2^x = 16$ (4)

QUESTION/VRAAG 1

1.1.1	$(x + 4)(x - 5) = 0$ $\therefore x = -4$ or $x = 5$	✓ factors/ <i>faktore</i> ✓ answers/ <i>antwoorde</i> (2)
1.1.2	$2x^2 - 11x + 7 = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $= \frac{-(-11) \pm \sqrt{(-11)^2 - 4(2)(7)}}{2(2)}$ $= 4,77 \text{ or } 0,73$	✓ substitution into correct formula/ <i>substitusie in korrekte formule</i> ✓ 4,77 ✓ 0,73 (3)

<p>1.1.3</p>	<p> $5x^2 - 21x + 4 > 0$ $(5x - 1)(x - 4) > 0$ $x < \frac{1}{5}$ or/of $x > 4$ </p>  <p>or</p> 	<p> ✓ standard form/ <i>standaardvorm</i> ✓ factors/<i>faktore</i> </p> <p> ✓ $x < \frac{1}{5}$ ✓ $x > 4$ ✓ of </p> <p>(5)</p>
<p>1.1.4</p>	<p> $2^{2x} - 6 \cdot 2^x = 16$ $2^{2x} - 6 \cdot 2^x - 16 = 0$ $(2^x - 8)(2^x + 2) = 0$ $2^x = 2^3$ or/of $2^x = -2$ $x = 3$ or/of No Solution or $2^x \neq -2$ </p>	<p> ✓ factors/<i>faktore</i> </p> <p> ✓ no solution to/ <i>geen oplossing</i> $2^x = -2$ ✓ $2^x = 2^3$ ✓ answer/<i>antw.</i> </p> <p>(4)</p>

1.2

Solve for x and y simultaneously:

$$y + 1 = 2x$$

$$x^2 - xy + y^2 = 7$$

(6)

1.2

$$y = 2x - 1$$

$$x^2 - x(2x - 1) + (2x - 1)^2 = 7$$

$$x^2 - 2x^2 + x + 4x^2 - 4x + 1 = 7$$

$$3x^2 - 3x - 6 = 0$$

$$x^2 - x - 2 = 0$$

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

$$x = 2 \text{ or/of } x = -1$$

$$y = 3 \text{ or/of } y = -3$$

✓ *y* the subject/
die onderwerp

✓ substitution/*substitusie*

✓ simplification/*vereenv.*

✓ factors/*faktore*

✓ *x*-values/*waardes*

✓ *y*-values/*waardes*

(6)

1.3 The roots of a quadratic equation are given by $x = \frac{-5 \pm \sqrt{20+8k}}{6}$,
where $k \in \{-3; -2; -1; 0; 1; 2; 3\}$.

1.3.1 Write down TWO values of k for which the roots will be rational. (2)

1.3.2 Write down ONE value of k for which the roots will be non-real. (1)

1.4 Calculate a and b if $\sqrt{\frac{7^{2014} - 7^{2012}}{12}} = a(7^b)$ and a is not a multiple of 7. (4)

1.3.1	$k = -2$ or/of $k = 2$	✓ ✓ answer/antw. (2)
1.3.2	$k = -3$	✓ -3 (1)

1.4

$$\sqrt{\frac{7^{2014} - 7^{2012}}{12}}$$

$$= \sqrt{\frac{7^{2012}(7^2 - 1)}{12}}$$

$$= \sqrt{\frac{7^{2012} \cdot 48}{12}}$$

$$= \sqrt{7^{2012} \cdot 4}$$

$$= 2 \cdot 7^{1006}$$

$$a = 2; b = 1006$$

$$\checkmark \frac{7^{2012}(7^2 - 1)}{12}$$

$$\checkmark \sqrt{7^{2012} \cdot 4}$$

$$\checkmark 2 \cdot 7^{1006} \checkmark$$

OR/OF

$$\checkmark a = 2$$

$$\checkmark b = 1006$$

(4)

[27]