A63 (H) Quadratics Inequalities

OCR

17 Solve the inequality.

A63 $x^2 - 5x - 6 \leqslant 0$

..... **[4]**

17 Solve the inequality.

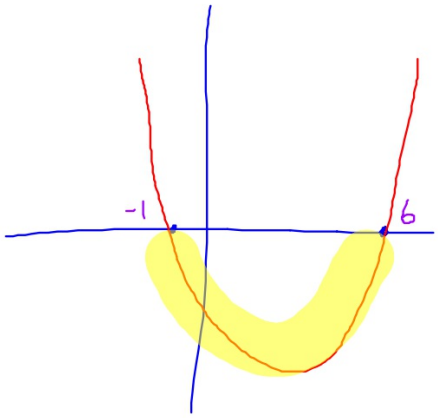
A63 $x^2 - 5x - 6 \leqslant 0$

$(x-6)(x+1) = 0$

$x = 6 \quad x = -1$

-6

$-6 + 1 = -5$



$-1 \leqslant x \leqslant 6$

..... **[4]**

EDEXCEL

19 Solve $x^2 > 3x + 4$

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.....

(Total for Question 19 is 3 marks)

19 Solve $x^2 > 3x + 4$

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$x^2 - 3x - 4 > 0$

$(x - 4)(x + 1) > 0$

-4
-2 +2
-1 +4
-4 +1

□ × □ > 0

\+ × + > 0

− × − > 0

$(x-4)(x+1) > 0$

$x - 4 > 0$, $x + 1 > 0$

$x > 4$, $x > -1$

$x - 4 < 0$, $x + 1 < 0$

$x < 4$, $x < -1$

$x > 4$, $x < -1$

(Total for Question 19 is 3 marks)

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21 Solve the inequality $x^2 > 3(x + 6)$

.....

(Total for Question 21 is 4 marks)

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21 Solve the inequality $x^2 > 3(x + 6)$ .... normal Quadratic $ax^2+bx+c>0$

$x^2 > 3(x+6)$

$x^2 > 3x + 18$

$x^2 - 3x - 18 > 0$

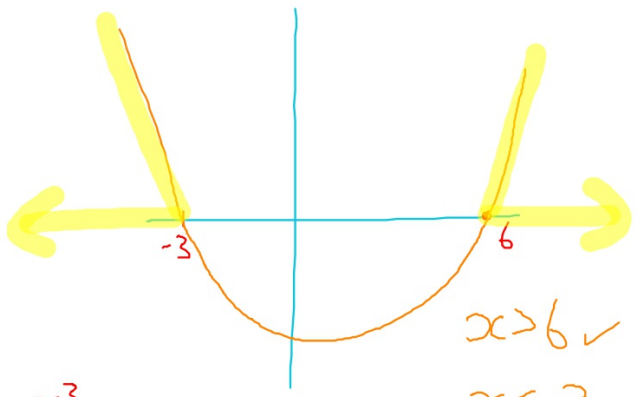
$(x - 6)(x + 3) > 0$

$x = 6$ and $x = -3$

-18

$-6 \quad +3 = -3$ ✓

$+6 \quad -3 = +3$ ✗



$x > 6$ ✓

$x < -3$ ✓

.....

(Total for Question 21 is 4 marks)

Video created by W Neill

19 Solve $2x^2 - 5x - 12 > 0$

.....

(Total for Question 19 is 3 marks)

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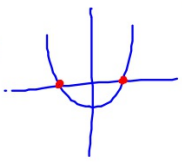
19 Solve $2x^2 - 5x - 12 > 0$

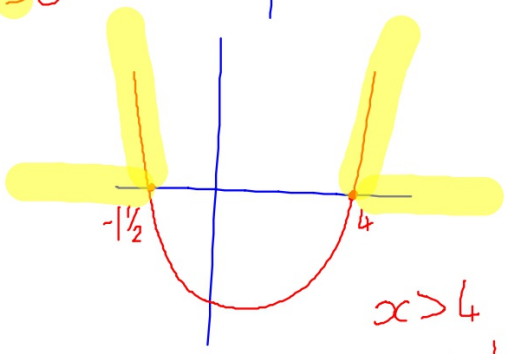
quadratic

Solve for x

$(2x + 3)(x - 4) > 0$

$3x - 8x$ ✓





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

$2x + 3 = 0$

$2x = -3$

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

$x = 4$

$x > 4$ ✓

$x < -1\frac{1}{2}$ ✓

(Total for Question 19 is 3 marks)

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19 Solve $2x^2 + 3x - 2 > 0$

.....

(Total for Question 19 is 3 marks)

Video created by W Neill

19 Solve $2x^2 + 3x - 2 > 0$

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

$2x - 1 = 0$ and $x = -2$ ✓

$2x = 1$

$x = \frac{1}{2}$ ✓

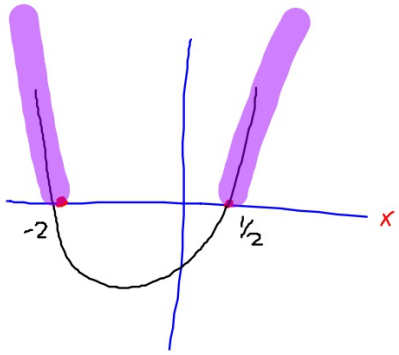
2 roots

-2 ✓ 2 -1

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

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

$2x^2 + 3x - 2$



$x < -2$, $x > \frac{1}{2}$

(Total for Question 19 is 3 marks)

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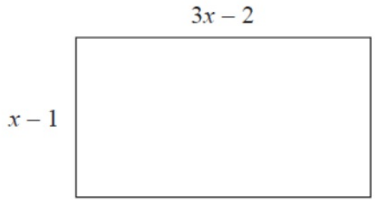
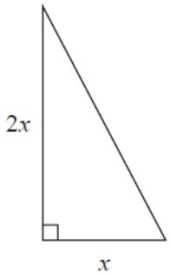
23 Here is a rectangle and a right-angled triangle.





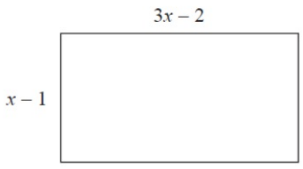
All measurements are in centimetres.
The area of the rectangle is greater than the area of the triangle.

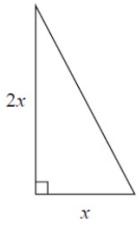
Find the set of possible values of x.

(Total for Question 23 is 5 marks)

23 Here is a rectangle and a right-angled triangle.

Created by W Neill





All measurements are in centimetres.
The area of the rectangle is greater than the area of the triangle.

Find the set of possible values of x.

$(3x-2)(x-1)$

$3x^2-3x-2x+2$

$3x^2-5x+2$

$\frac{B \times H}{2}$

$\frac{2x \times x}{2} = \frac{2x^2}{2}$

$= 1x^2$

$3x^2-5x+2 > 1x^2$

$3x^2-5x+2-1x^2 > 0$

$2x^2-5x+2 > 0$

$(2x-1)(x-2) > 0$

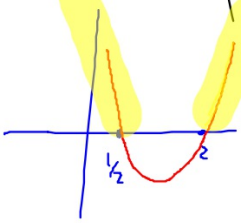
$2x-1=0$

$2x=1$

$x=\frac{1}{2}$

$x-2=0$

$x=2$



$x > 2$ ✓

~~$x < \frac{1}{2}$~~

(Total for Question 23 is 5 marks)

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20 n is an integer such that $3n + 2 \leqslant 14$ and $\dfrac{6n}{n^2 + 5} > 1$

A19
A63 Find all the possible values of n.

.....

(Total for Question 20 is 5 marks)

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20 n is an integer such that $3n + 2 \leqslant 14$ and $\dfrac{6n}{n^2 + 5} > 1$

A19
A63 Find all the possible values of n.

$3n+2 \leq 14$

$3n \leq 12$

$n \leq 4$

$\dfrac{6n}{n^2+5} > 1$

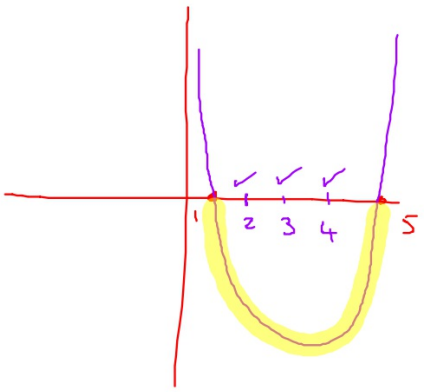
$6n > 1(n^2+5)$

$0 > n^2+5-6n$

$n^2-6n+5 < 0$

$(n-5)(n-1) \leq 0$

$n=5 \quad n=1$



2, 3, 4 ✓

(Total for Question 20 is 5 marks)

AQA

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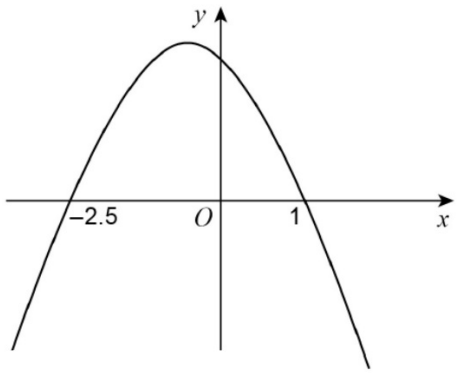
21 Here is a sketch of $y = f(x)$ where $f(x)$ is a quadratic function.

AO3 The graph intersects the x-axis where $x = -2.5$ and $x = 1$



Circle the solution of $f(x) > 0$

[1 mark]

$x < -2.5$ or $x > 1$

$x > -2.5$ or $x > 1$

$-2.5 < x < 1$

$x > -2.5$ or $x < 1$

Video created by W Neill

21 Here is a sketch of $y = f(x)$ where $f(x)$ is a quadratic function.

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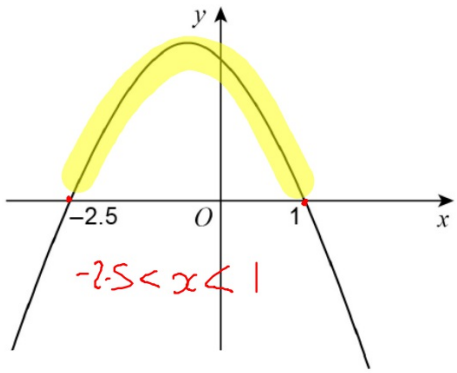


Circle the solution of $f(x) > 0$

[1 mark]

$x < -2.5$ or $x > 1$

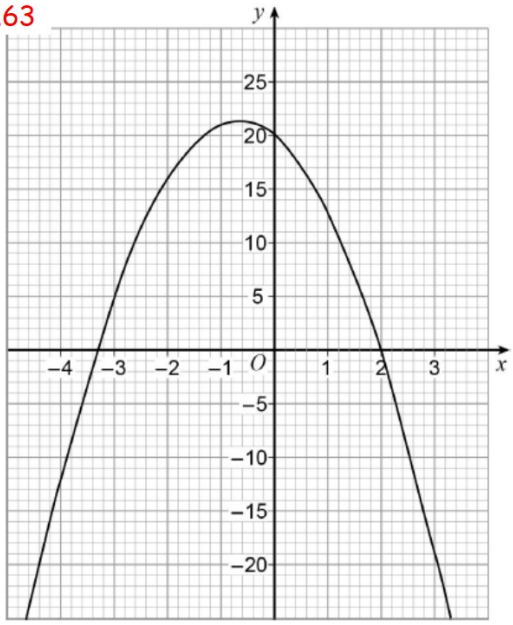
$x > -2.5$ or $x > 1$

$-2.5 < x < 1$

$x > -2.5$ or $x < 1$

29 Here is the graph of $y = f(x)$ where $f(x)$ is a quadratic function.

A63



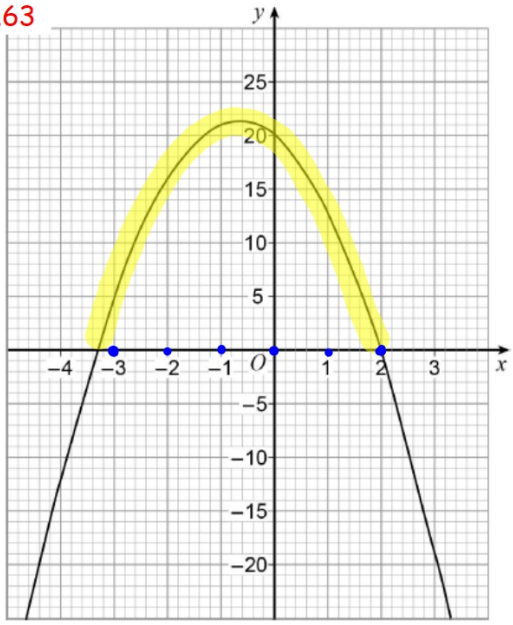
Write down all the **integer** solutions of $f(x) \geqslant 0$

[2 marks]

Answer _____

29 Here is the graph of $y = f(x)$ where $f(x)$ is a quadratic function.

A63



Write down all the **integer** solutions of $f(x) \geqslant 0$

[2 marks]

Answer -3, -2, -1, 0, 1, 2