Name:

Level 2 Further Maths

Inequalities

Corbettmaths

Ensure you have: Pencil or pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

www.corbettmaths.com/more/further-maths/

1. Solve the inequality $\frac{2-5x}{3} > -4$

$2 - 5x > -12$

$-5x > -14$

$x < 2\frac{4}{5}$

$x < 2\frac{4}{5}$

(2)

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2. Write down the largest integer that satisfies $\frac{10-3x}{9} > 15$

$10 - 3x > 135$

$-3x > 125$

$x < -41\frac{2}{3}$

$x < -41\frac{2}{3}$

(3)

3. Write down all the integer solutions to

$$-9 < \frac{x}{4} - 1 < -8$$

$-8 < \frac{x}{4} < -7$

$-32 < x < -28$

$-31, -30, -29$

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4. Find the range of values of x that satisfies both

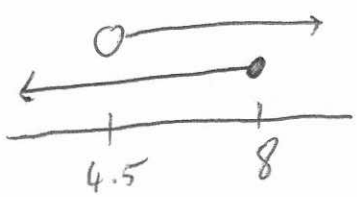
$3(x+2) \leq 30$ and $4x + 3 > 21$

$x + 2 \leq 10$

$x \leq 8$

$4x > 18$

$x > 4.5$



$4.5 < x \leq 8$

(4)

5. Solve the inequality

$$8(x-2)-3(1-x) \leq 9(x+2)+1$$

$8x - 16 - 3 + 3x \leq 9x + 18 + 1$

$11x - 19 \leq 9x + 19$

$2x \leq 38$

$x \leq 19$

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(4)

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6. $-5 < a < -1$ and $-2 < b < -1$

Write down an inequality for each of the following

(a) ab

$1 < ab < 10$

.....

(2)

(b) b^2

$1 < b^2 < 4$

.....

(2)

7. $-1 \leq c \leq 10$ and $-4 \leq d \leq -2$

Write down an inequality for each of the following

(a) $d - c$

$-14 \leq d - c \leq -1$

(2)

(b) c^2

$0 \leq c^2 \leq 100$

(2)

(c) $\frac{c}{d}$

$-5 \leq \frac{c}{d} \leq \frac{1}{2}$

(2)

(d) $(c + d)^2$

$0 \leq (c+d)^2 \leq 64$

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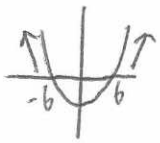
8. Solve $x^2 \geq 36$

$x^2 - 36 \geq 0$



$x \leq -6$ or $x \geq 6$

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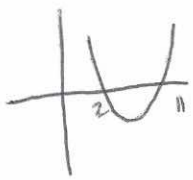
9. Solve the inequality $x^2 - 13x + 22 < 0$

$(x - 11)(x - 2)$



$2 < x < 11$

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10. Solve the inequality $x^2 + 9x + 18 \geq 0$

$(x + 6)(x + 3)$

$x \leq -6$ or $x \geq -3$

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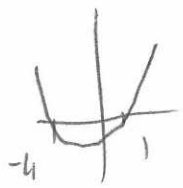
11. Solve the inequality $x^2 + 3x - 4 > 0$

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



$x < -4$ or $x > 1$

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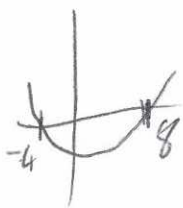
12. Solve the inequality $x^2 - 4x - 32 \leq 0$

$(x-8)(x+4)$



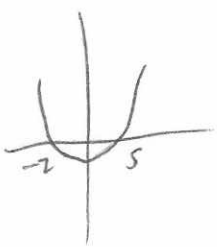
$-4 \leq x \leq 8$

(3)

13. Solve the inequality $-x^2 + 3x + 10 > 0$

$x^2 - 3x - 10 < 0$

$(x-5)(x+2)$



$-2 < x < 5$

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14. Solve the inequality $5x^2 + 7x + 2 > 0$

$(5x + 2)(x + 1)$

$x = -\frac{2}{5}$ $x = -1$

$x < -1$ or $x > -\frac{2}{5}$

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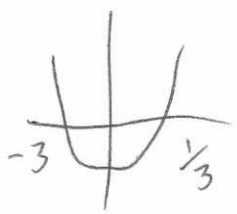
15. Solve the inequality $3x^2 + 8x - 3 \leq 0$

$(3x - 1)(x + 3)$

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



$-3 \leq x \leq \frac{1}{3}$

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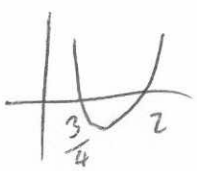
16. Solve the inequality $4x^2 - 11x + 6 < 0$

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

$x = \frac{3}{4}$ $x = 2$



$\frac{3}{4} < x < 2$

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17. Solve the inequality $x^2 + 6x + 3 < 0$

Leave your answer in surd form.

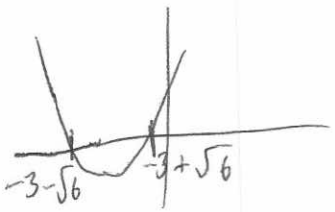
$(x+3)^2 - 9 + 3 = 0$

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

$(x+3)^2 = 6$

$x + 3 = \pm\sqrt{6}$

$x = -3 \pm \sqrt{6}$



$-3-\sqrt{6} < x < -3+\sqrt{6}$

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18. Solve the inequality $(2x + 5)^2 - 3x(x + 2) > 0$

$4x^2 + 20x + 25 - 3x^2 - 6x > 0$

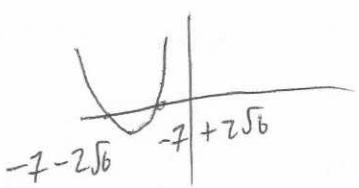
$x^2 + 14x + 25 > 0$

$(x+7)^2 - 49 + 25 = 0$

$(x+7)^2 = 24$

$x + 7 = \pm 2\sqrt{6}$

$x = -7 \pm 2\sqrt{6}$



$x < -7-2\sqrt{6}$ or $x > -7+2\sqrt{6}$

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