

CHALLENGING ABSOLUTE VALUE PROBLEMS

CANSU OLCE

A STAR MATHS (www.astarmaths.com.au)

1. $|2 + |-4 - |-5|| - 2 = ?$

2. $a < b < 0$

Simplify $|-a - |b - |a||$.

3. Simplify $|\sqrt{2} - 5| + |3 - \sqrt{2}|$.

4. $a^2b^3 < 0$

$a^3b^2 < 0$

$\frac{|a + b| + a}{|a| - |a - b|} = ?$

5. $a = 1 - \sqrt{2}$

$b = \sqrt{3} - 1$

$\sqrt[4]{a^4} - \sqrt{(a - b)^2} + \sqrt[3]{-b^3} = ?$

6. $x < 2$

Simplify $\sqrt{x^2 - 3x + 2} + \sqrt{x^2 - 4x + 4}$.

7. $|x| = 9$
 $|y| = 10$
Find $\max(y - 2x)$.

8. $|x + y + 2| + |x - 2y + 5| = 0$
Find xy .

9. $||3x - 1| - 4| = 3$
Find the sum of possible integer values for x .

10. $|x + 2| = 2|x - 3|$
Find the sum of possible values for x .

11. $|2x - 3| < 9$
Find the sum of possible integer values for x .

12. $\left| \frac{3}{x - 3} \right| > 1$
Find the sum of possible integer values for x .

13. $2 < |2x - 1| \leq 5$

Find the sum of possible integer values for x.

14. $|x + 1| - |x - 2| > 0$

Find the minimum integer value for x.

15. $|x - 2| - |x + 6| = 8$

Find the number of possible x values.

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ANSWER KEY

1. -1
2. -b
3. $8 - 2\sqrt{2}$
4. -1
5. $2 - 2\sqrt{3}$
6. $2-x$
7. 28
8. -3
9. $\frac{4}{3}$
10. $\frac{28}{3}$
11. 8
12. 4
13. 4
14. 1
15. 9

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