

1. Solve

$$|2x + 3| = 5$$

Solution:

$$\begin{array}{llll} \text{if } |2x + 3| = 5 & & & \text{(is given, then)} \\ 2x + 3 = 5 & \text{or} & 2x + 3 = -5 & \text{(AVT)} \\ x = 1 & \text{or} & x = -4 & \text{(BI)} \end{array}$$

don't forget to check each solution...

2. Solve

$$|-3x + 1| = 2x$$

Solution:

$$\begin{array}{llll} \text{if } |-3x + 1| = 2x & & & \text{(is given, then)} \\ -3x + 1 = 2x & \text{or} & -3x + 1 = -2x & \text{(AVT)} \\ x = \frac{1}{5} & \text{or} & x = 1 & \text{(BI)} \end{array}$$

don't forget to check each solution...

3. Solve

$$|2x + 3| = -x + 1$$

Solution:

$$\begin{array}{llll} \text{if } |2x + 3| = -x + 1 & & & \text{(is given, then)} \\ 2x + 3 = -x + 1 & \text{or} & 2x + 3 = x - 1 & \text{(AVT)} \\ x = -\frac{2}{3} & \text{or} & x = -4 & \text{(BI)} \end{array}$$

don't forget to check each solution...

4. Solve

$$|2x + 3| = x + 1$$

Solution:

$$\begin{array}{llll} \text{if } |2x + 3| = x + 1 & & & \text{(is given, then)} \\ 2x + 3 = x + 1 & \text{or} & 2x + 3 = -x - 1 & \text{(AVT)} \\ x = -2 & \text{or} & x = -\frac{4}{3} & \text{(BI)} \end{array}$$

don't forget to check each solution...

5. Solve

$$|2x + 4| = 1$$

Solution:

$$\begin{array}{llll} \text{if } |2x + 4| = 1 & & & \text{(is given, then)} \\ 2x + 4 = 1 & \text{or} & 2x + 4 = -1 & \text{(AVT)} \\ x = -\frac{3}{2} & \text{or} & x = -\frac{5}{2} & \text{(BI)} \end{array}$$

don't forget to check each solution...

6. solve $|x + 3| + 2|x| = 5$

Solution: think about it... it's not always about the answer.. sometimes it's about the 'thinking about it'!!

7. Solve

$$|-3x + 1| = 2$$

Solution:

$$\begin{array}{llll} \text{if } |-3x + 1| = 2 & & & \text{(is given, then)} \\ -3x + 1 = 2 & \text{or} & -3x + 1 = -2 & \text{(AVT)} \\ x = -\frac{1}{3} & \text{or} & x = 1 & \text{(BI)} \end{array}$$

don't forget to check each solution...

8. Solve

$$|x + 3| = 5$$

Solution:

$$\begin{array}{llll} \text{if } |x + 3| = 5 & & & \text{(is given, then)} \\ x + 3 = 5 & \text{or} & x + 3 = -5 & \text{(AVT)} \\ x = 2 & \text{or} & x = -8 & \text{(BI)} \end{array}$$

don't forget to check each solution...

9. Solve

$$-4|2x - 3| + 5x = 2$$

Solution:

$$\begin{array}{llll} \text{if } -4|2x - 3| + 5x = 2 & & & \text{(is given, then)} \\ -4|2x - 3| = -5x + 2 & & & \text{(CLA, BI, trying to isolate the abs val)} \\ |2x - 3| = \frac{-5x + 2}{-4} & & & \text{(CLM, BI)} \\ |2x - 3| = \frac{5}{4}x - \frac{1}{2} & & & \text{(BI)} \\ 2x - 3 = \frac{5}{4}x - \frac{1}{2} & \text{or} & 2x - 3 = -\frac{5}{4}x + \frac{1}{2} & \text{(AVT)} \\ x = \frac{10}{3} & \text{or} & x = \frac{14}{13} & \text{(BI)} \end{array}$$

don't forget to check each solution...

10. Solve

$$|-3x + 1| = 2x + 3$$

Solution:

$$\begin{array}{llll} \text{if } |-3x + 1| = 2x + 3 & & & \text{(is given, then)} \\ -3x + 1 = 2x + 3 & \text{or} & -3x + 1 = -2x - 3 & \text{(AVT)} \\ x = -\frac{2}{5} & \text{or} & x = 4 & \text{(BI)} \end{array}$$

don't forget to check each solution...

11. Prove AVT (if you can't prove it, just try to prove it for at least 15 hours, not consecutive hours)

12. Solve

$$|-3x + 1| = -2x + 3$$

Solution:

$$\begin{array}{ll} \text{if } |-3x + 1| = -2x + 3 & \text{(is given, then)} \\ -3x + 1 = -2x + 3 \quad \text{or} \quad -3x + 1 = 2x - 3 & \text{(AVT)} \\ x = -2 \quad \text{or} \quad x = \frac{4}{5} & \text{(BI)} \end{array}$$

don't forget to check each solution...

13. Solve

$$|5x - 1| = -x - 1$$

Solution:

$$\begin{array}{ll} \text{if } |5x - 1| = -x - 1 & \text{(is given, then)} \\ 5x - 1 = -x - 1 \quad \text{or} \quad 5x - 1 = x + 1 & \text{(AVT)} \\ x = 0 \quad \text{or} \quad x = \frac{1}{2} & \text{(BI)} \end{array}$$

don't forget to check each solution...

14. Solve

$$|2x - 4| = 2$$

Solution:

$$\begin{array}{ll} \text{if } |2x - 4| = 2 & \text{(is given, then)} \\ 2x - 4 = 2 \quad \text{or} \quad 2x - 4 = -2 & \text{(AVT)} \\ x = 3 \quad \text{or} \quad x = 1 & \text{(BI)} \end{array}$$

don't forget to check each solution...

15. Solve

$$2|5x - 1| + x = 1$$

Solution:

$$\begin{array}{ll}
 \text{if } 2|5x - 1| + x = 1 & \text{(is given, then)} \\
 2|5x - 1| = -x + 1 & \text{(CLA, BI, trying to isolate the abs val)} \\
 |5x - 1| = \frac{-x + 1}{2} & \text{(CLM, BI)} \\
 |5x - 1| = -\frac{1}{2}x + \frac{1}{2} & \text{(BI)} \\
 5x - 1 = -\frac{1}{2}x + \frac{1}{2} \quad \text{or} \quad 5x - 1 = \frac{1}{2}x - \frac{1}{2} & \text{(AVT)} \\
 x = \frac{3}{11} \quad \text{or} \quad x = \frac{1}{9} & \text{(BI)}
 \end{array}$$

don't forget to check each solution...