[07-09-09A-T10-Problems]

Absolute value equations

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[1] $|3(x-1)+6| = 20$

[2] $|2x-7| = |-12|$

[3] $|x+8| = |x-8|$

[4] $|x-8| = |8-x|$

[5] $|x+\frac{1}{2}| = |x+3|$

[6] $|5||x-2| = |x+4|$

[7] $|-5||x-2| = |x+4|$

[8] $|-3||8x-11| = -3$

[9] $|(3x-5)-7| = -|3|$

[10] $-|3||7-y| = -|2y|$

[07-09-09A-T10-Answers]

Absolute value equations

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[1] $\{\{x \to -\frac{23}{3}\}, \{x \to \frac{17}{3}\}\}$

[2] $\{\{x \to -\frac{5}{2}\}, \{x \to \frac{19}{2}\}\}$

[3] $\{\{x \to 0\}\}$

[4] $\emptyset$

[5] $\{\{x \to -\frac{7}{4}\}\}$

[6] $\{\{x \to 1\}, \{x \to \frac{7}{2}\}\}$

[7] $\{\{x \to 1\}, \{x \to \frac{7}{2}\}\}$

[8] $\emptyset$

[9] $\emptyset$

[10] $\{\{y \to \frac{21}{5}\}, \{y \to 21\}\}$

[07-09-09B-T10-Problems]

Absolute value and linear inequalities

■ **Answer the following using interval notation.**
A graph is <u>not</u> required, but may be helpful to you.

[1] $|x-5| \leq 9$

[2] $|x-5| > 9$

[3] $|2x-3| \leq 5x+3$

[4] $|-2||x+4| \leq 5x+3$

[5] $|3x+10| > 3$

[6] $|4x+4| \leq 4$

[7] $|3x+8| \geq 9$

[8] $\frac{|x-2|}{|-5|} < 1$

[9] $|x-\frac{2}{3}| < 6$

[10] $|x-\frac{2}{3}| \geq \frac{5}{6}$

[07-09-09B-T10-Answers]

Absolute value and linear inequalities

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[1] $[-4, 14]$

[2] $(-\infty, -4) \bigcup (14, \infty +)$

[3] $[0, \infty +)$

[4] $[\frac{5}{3}, \infty +)$

[5] $(-\infty, -\frac{13}{3}) \bigcup (-\frac{7}{3}, \infty +)$

[6] $[-2, 0]$

[7] $(-\infty, -\frac{17}{3}) \bigcup (\frac{1}{3}, \infty +)$

[8] $(-3, 7)$

[9] $(-\frac{16}{3}, \frac{20}{3})$

[10] $(-\infty, \frac{-1}{6}) \bigcup (\frac{3}{2}, \infty +)$

[07-09-09C-T10-Problems]

Quadratic inequalities

■ **Answer the following using interval notation.**
A graph is <u>not</u> required, but may be helpful to you.

[1] Find all values of x for which $x^2 - x + 10 < 12$ is true.

[2] Find all values of x for which $3\,x^2 - 24\,x + 33 < -12$ is true.

[3] Find all values of x for which $x^2 + 1 \leq 5$ is true.

[4] Find all values of x for which $\left(x - \sqrt{3}\right)\left(x + \sqrt{3}\right) > 1$ is true.

[1] $(-1, 2)$

[2] $(3, 5)$

[3] $[-2, 2]$

[4] $(-\infty, -2) \bigcup (2, \infty +)$

[07-09-09D-T10-Problems]

Absolute value inequalities involving quadratic expressions

■ **Answer the following using interval notation.**
A graph is <u>not</u> required, but may be helpful to you.

[1] Find all values of x for which $|x^2 + 5x + 20| < 14$ is true.

[2] Find all values of x for which $|x^2 - 6x + 4| \leq -5$ is true.

[3] Find all values of x for which $|x^2 - 6x + 4| > 0$ is true.

[1] $(-3, -2)$

[2] $x \in \phi$

[3] $(-\infty, \infty +)$

[07-09-09E-T10-Problems]

Absolute value inequalities involving rational expressions

■ **Answer the following using interval notation.**
A graph is <u>not</u> required, but may be helpful to you.

[1] Find all values of x for which $\left|\frac{x+3}{x-3}\right| > 4$ is true.

[2] Find all values of x for which $\left|\frac{x-4}{x-2}\right| \leq 5$ is true.

[3] Find all values of x for which $\left|\frac{x-4}{x-2}\right| \leq 1$ is true.

[4] Find all values of x for which $\left|\frac{x-4}{3}\right| \leq 1$ is true.

[1] $(\frac{9}{5}, 3) \bigcup (3, 5)$

[2] $(-\infty, \frac{3}{2}] \bigcup [\frac{7}{3}, \infty +)$

[3] $[3, \infty +)$

[4] $[1, 7]$