

MATH 110 Review Problem Set 0.A

Edward Doolittle

Tuesday, January 6, 2026

The following problems based on Appendix A of the textbook will help you review. *You do not need to hand in solutions to these problems.*

1. (Based on A.1–8) Rewrite the expression without using the absolute value symbol.
(a) $|8| - |-11|$ (b) $|\pi - 4|$ (c) $\left| |-3| - |-5| \right|$ (d) $|2 - x|$ if $x \geq 2$
2. (Based on A.13–22) Solve the inequality in terms of intervals and illustrate the solution set on the real number line.
(a) $4x - 10 > 5$ (b) $6 - 5x \leq 8$ (c) $3x - 1 < 2 - x$ (d) $-2 \leq 3 - 2x \leq 6$
3. (Based on A.43–44) Solve the equation for x .
(a) $|4x| = 1$ (b) $|2x - 1| = 4$
4. (Based on A.47–54) Solve the inequality.
(a) $|x| \geq 5$ (b) $|x - 2| \leq 0.5$ (c) $|x + 1| \geq 2$ (d) $|3x - 1| < 4$
5. (Based on A.9–12) Rewrite the expression without using the absolute value symbol.
(a) $|1 - 2x|$ (b) $|x^2 - 1|$
6. (Based on A.23–38) Solve the inequality in terms of intervals and illustrate the solution set on the real number line.
(a) $4x - 5 < 3x - 2 < 5x + 2$ (b) $3x^2 - x - 4 \geq 0$ (c) $x^3 + 6x < 5x^2$ (d) $-1 < 1/x \leq 3$
7. (Based on A.39–42) As dry air moves upward, it expands and in so doing cools at a rate of about 1°C for each 100 m rise, up to about 12000 m.
 - (a) If the ground temperature is 20°C , write a formula for the temperature at height h .
 - (b) What range of temperature can be expected if a plane takes off and reaches standard cruising altitude of 11000 m?
8. (Based on A.45–46) Solve the equation for x .

$$(a) \frac{|2x+1|}{|x-1|} = 3 \quad (b) |x+4| = |3x-2|$$

9. (Based on A.55–56) Solve the inequality and illustrate the solution set on the real number line.

$$(a) 3 \leq |2x| \leq 5 \quad (b) 0 < |x-4| < 1$$

10. (Based on A.57–60) Solve for x , assuming that b and c are positive and a is negative.

$$(a) ax+b < c \quad (b) c(ax+b) \leq b$$

11. State whether or not the equation is true for all values of the variable x .

$$(a) \sqrt{x^2 + 9} = |x| + 3 \quad (b) \frac{a}{a+x} = \frac{1}{1+x}$$

You may find the following additional exercises from Appendix A helpful.

Appendix A C-level: 1–8, 13–22, 43–44, 47–54;

B-level: 9–12, 23–38, 39–42, 45–46, 55–56;

A-level: 57–70