

## Quiz

1. Solve the absolute value equation:  $|x - 5| = 1$

2. Solve the absolute value equation:  $2|3x + 2| - 12 = 0$

3. Find when  $f(x) = 2|3x + 2| - 12$  crosses the  $x$ -axis.

4. Solve the absolute value inequality  $|x + 1| < 10$

5. Write an equivalent distance statement for  $|x + 1| < 10$

6. Write an equivalent distance statement for  $|2x - 3| < 5$

7. Find the domain and range of  $f(x) = 3 - |x + 2|$ . Then sketch a picture of its graph.

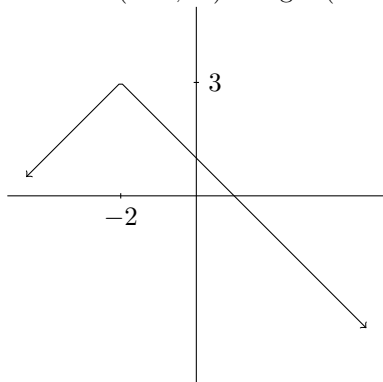
8. Find a value  $k > 0$  so that  $|x| < k$  implies that  $|x - 1| < 3$ .

9. Find a value  $k > 0$  so that  $|x - 1| < k$  implies that  $|2x - 1| < 3$ .

**Remember:** The answers below are to help you check your work. The important thing is to be able to create and understand the complete solutions to these problems. Please re-read over the definitions/theorems/examples in the above notes as many times as necessary to gain a full understanding. Feel free to email your instructor or visit the MLC if you have questions. Typically on quizzes and exams the answer is worth very few points. The majority of the points are awarded on **the work** needed to get to the answer.

## Answers

1.  $x = 4$  or  $x = 6$
2.  $x = \frac{4}{3}$  or  $x = \frac{-8}{3}$
3.  $x = \frac{4}{3}$  or  $x = \frac{-8}{3}$
4.  $-11 < x < 9$
5.  $x$  is less than 10 units from  $-1$ .
6.  $x$  is less than distance  $\frac{5}{2}$  away from  $\frac{3}{2}$ .
7. Domain:  $(-\infty, \infty)$  Range:  $(-\infty, 3]$



8.  $k = 2$  is the largest (and therefore somewhat the best) but any value of  $k \in (0, 2]$  will work.
9.  $k = 1$  is the largest (and therefore somewhat the best) but any value of  $k \in (0, 1]$  will work.