

Name: Key

Section: _____

You have 10 minutes to complete the quiz. Please show all work, and then circle your answer.

1. Solve for x satisfying

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

2 pts \rightarrow $2x - 3 = 5$ OR $2x - 3 = -5$
 $2x = 8$ \vdots $2x = -2$

(1 pt each) \rightarrow $x = 4$ OR $x = -1$

max of 1 pt if don't use cases

2. Rewrite the following as a single interval:

$(-\infty, 4) \cup [3, 7]$

$(-\infty, 7]$

$(-\infty, 4) \cap [3, 7]$

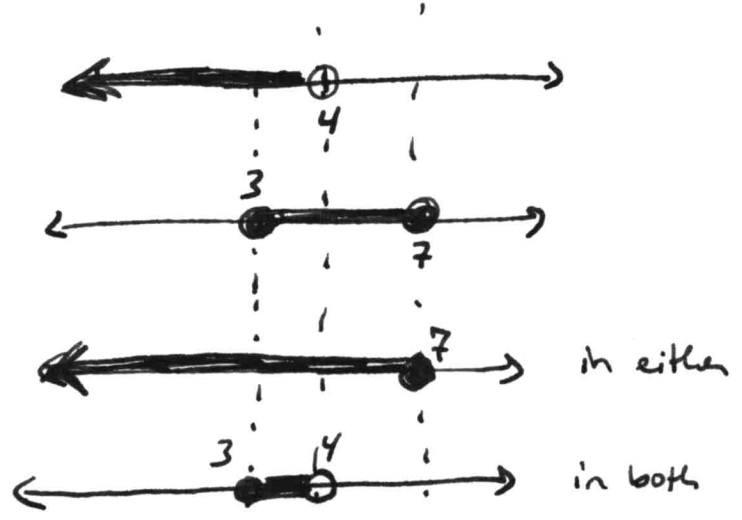
$[3, 4)$

$A = (-\infty, 4)$

$B = [3, 7]$

$A \cup B$

$A \cap B$



3. For each of the following equalities, assume that x and y stand for some real numbers, and that all denominators are non-zero.

(a) Is the statement $\frac{1}{x+2} = \frac{1}{x} + \frac{1}{2}$ always true? Give a proof or counterexample.

No!

counterexample
false when $x=1$

$$\frac{1}{1+2} = \frac{1}{3} = 0.\bar{3}$$

BUT

$$\frac{1}{1} + \frac{1}{2} = \frac{3}{2} = 1.5$$

1 pt for answer
1 pt for good argument.

(b) Is the statement $\frac{x+2}{x} = 1 + \frac{2}{x}$ always true? Give a proof or counterexample.

Yes!

Proof:

$$\frac{x+2}{x} = \frac{x}{x} + \frac{2}{x}$$

$$= 1 + \frac{2}{x} \checkmark$$

(adding w/ like denominators)

(cancellation)