

Unit 5 Quiz #2
SpringBoard

Name key

Date _____ Period _____

1. A skier travels x miles per hour when there is no wind. When the skier decided to travel 5 miles towards a pond, the skier's natural speed was increased by 6 miles per hour. On the skier's return from the pond, the skier's natural speed was decreased by 6 miles per hour.

(a) If the total trip took 2 hours, what would the skier's speed have been without wind?

$$x \setminus \frac{5}{x+6} + \frac{5}{x-6} = 2$$

$$(x-6)(x+6) = 0$$

$$x = \boxed{9 \text{ mph}}$$

$$\frac{10x}{x^2-36} = 2$$

$$10x = 2x^2 - 72$$

$$0 = 2x^2 - 10x - 72$$

$$0 = x^2 - 5x - 36$$

(b) What was the wind speed that day? Explain how you know.

$x \setminus$ 6 mph since the skier's speed was impacted by the wind of 6 mph both directions.

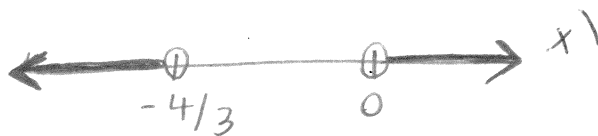
2. Solve the rational inequalities.

a. $\frac{x+4}{x} > -2$ $x \neq 0$

$$x+4 > -2x$$

$$3x > -4$$

$$x > -4/3$$



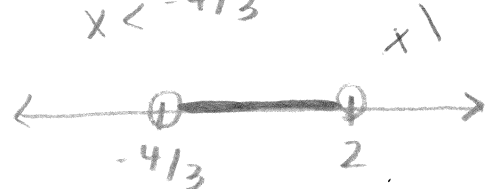
$$(-\infty, -4/3) \cup (0, \infty)$$

b. $\frac{10x}{x-2} < 4$ $x \neq 2$

$$10x < 4x - 8$$

$$6x < -8$$

$$x < -4/3$$



$$(-4/3, 2)$$

3. Solve the equation. Check for extraneous solutions.

$x \setminus -4$

$$\frac{x}{x+4} + \frac{x}{2} = \frac{2x}{2x+8}$$

$$\frac{2x + x^2 + 4x}{2x+8} = \frac{2x}{2x+8}$$

$$x^2 + 6x = 2x$$

$$x^2 + 4x = 0$$

$$x(x+4) = 0$$

$$x = 0, -4$$

$$\boxed{x = 0}$$