Lesson 7.4: Quadratic Inequalities in One Variable

Explore Your Understanding Assignment

This assignment includes multiple choice and short answer questions. For multiple choice questions, select the best answer. Each is worth 1 mark. Marks assigned to short answer questions are indicated for each question. Be sure to show all necessary work.

(1) _____ 1. The solution to $0 < (x + 144)(x + 67)$ is

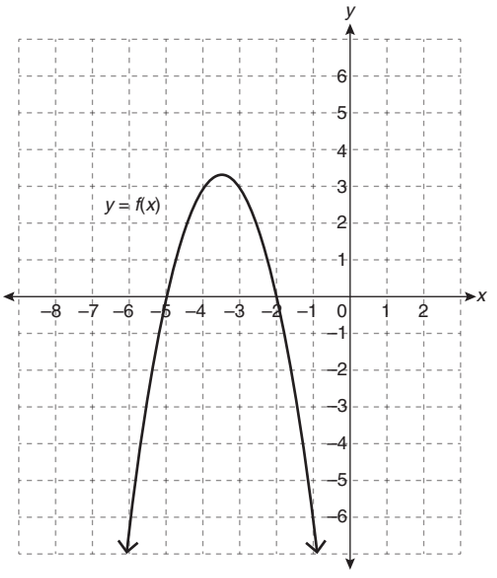
A. 

B. 

C. 

D. 

Use the following graph to answer question 2.



(1) _____ 2. The solution to $f(x) \geq 0$ is

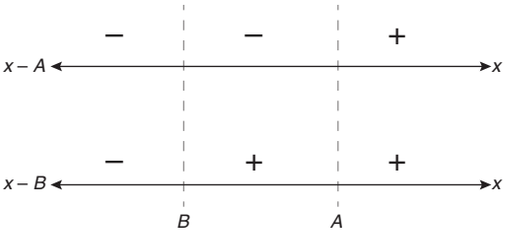
A. $\{x \mid -5 < x < -2, x \in \mathrm{R}\}$

B. $\{x \mid -5 \leq x \leq -2, x \in \mathrm{R}\}$

C. $\{x \mid -5 > x \text{ or } x > 2, x \in \mathrm{R}\}$

D. $\{x \mid -5 \geq x \text{ or } x \geq 2, x \in \mathrm{R}\}$

Use the following diagram to answer question 3.



(1) _____ 3. The solution to $(x - A)(x - B) \leq 0$ is

A. $\{x \mid A \leq x \leq B, x \in \mathrm{R}\}$
B. $\{x \mid B \leq x \leq A, x \in \mathrm{R}\}$
C. $\{x \mid x \geq A \text{ or } x \leq B, x \in \mathrm{R}\}$
D. $\{x \mid x \geq B \text{ or } x \leq A, x \in \mathrm{R}\}$

(1) _____ 4. If $r > 0$ and $s > 0$, the solution to the inequality $3(x - r)^2 > s$ will cover more of the number line when

A. r is increased
B. r is decreased
C. s in increased
D. s is decreased

(2) 5. Solve the inequality $x^2 - 15x + 40 \leq 10 - 4x$.

(2) 6. The kinetic energy of a moving object is related to its mass and velocity by the formula $E_k = \frac{1}{2}mv^2$, where E_k is the kinetic energy in joules, m is the mass of the object in kilograms, and v is the object's velocity in metres per second. What are the possible velocities for a 3 kg object with a kinetic energy of less than 600 J? (Negative velocities are acceptable and represent the opposite direction of a positive velocity.)

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