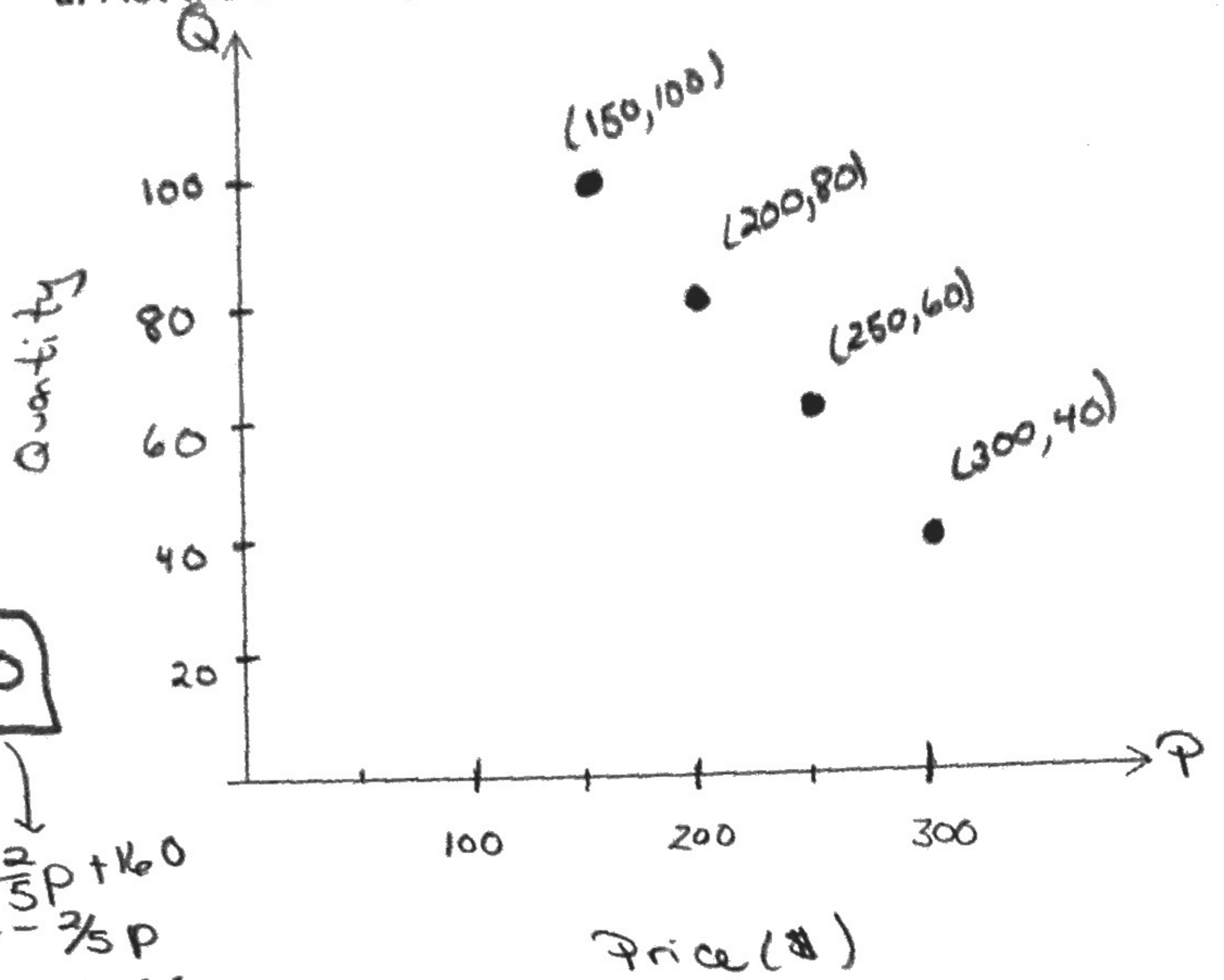


4. The following data represent the price p and quantity demanded per day q of a smart phone.

Price, p (in \$)	Quantity Demanded, q
150	100
200	80
250	60
300	40

a. Plot the ordered pairs (p, q) on a Cartesian plane.



b. Show that quantity demanded q is a linear function of the price p .

c. Determine the linear function that describes the relation between p and q .

$$y = -\frac{2}{5}x + b \quad \boxed{q = -\frac{2}{5}p + 160}$$

d. What is the implied domain of the linear function?

$$\{p \mid 0 \leq p \leq 400\}$$

$$0 = -\frac{2}{5}p + 160$$

$$-160 = -\frac{2}{5}p$$

$$p = 400$$

e. Interpret the slope and intercepts of the function.

Slope = $-\frac{2}{5}$ means a decrease of quantity demanded by 2 for every \$5 increase in price.
 (400, 0) = @ \$400 there would be 0 phones demanded
 (0, 160) = @ 160 phones demanded

5. Solve $2x^2 + 7x = 4$.

$$2x^2 + 7x - 4 = 0$$

$$x = \frac{-7 \pm \sqrt{7^2 - 4(2)(-4)}}{2(2)}$$

$$x = \frac{-7 \pm \sqrt{81}}{4}$$

$$x = \frac{-7 \pm 9}{4}$$

$$\boxed{x = \frac{1}{2} \text{ or } -4}$$

6. Solve $x^2 + 6x + 8 = 0$

$$(x + 4)(x + 2) = 0$$

$$\boxed{x = -4 \text{ or } -2}$$

A. Graph each quadratic function. B. Label the vertex. C. Draw in the axis of symmetry. D. Give the domain and range. E. Determine the increasing and decreasing intervals.

7. $f(x) = -2x^2 + 8x - 3$

$$x = \frac{-8}{2(-2)} = 2$$

$$S(2) = -2(2)^2 + 8(2) - 3$$

$$= -8 + 16 - 3$$

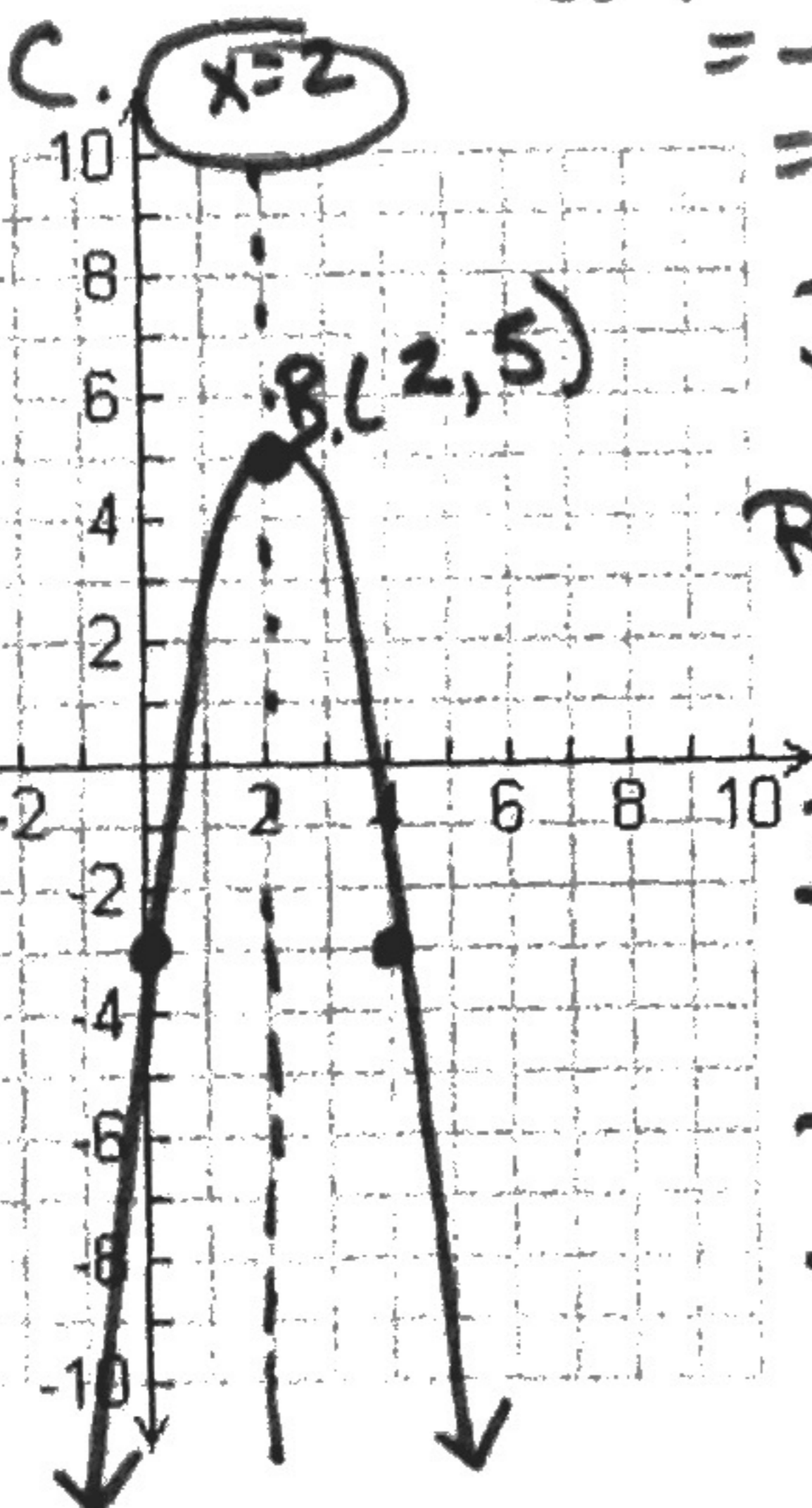
$$= 5$$

$$D: \{x \mid \mathbb{R}\}$$

$$R: \{y \mid y \leq 5\}$$

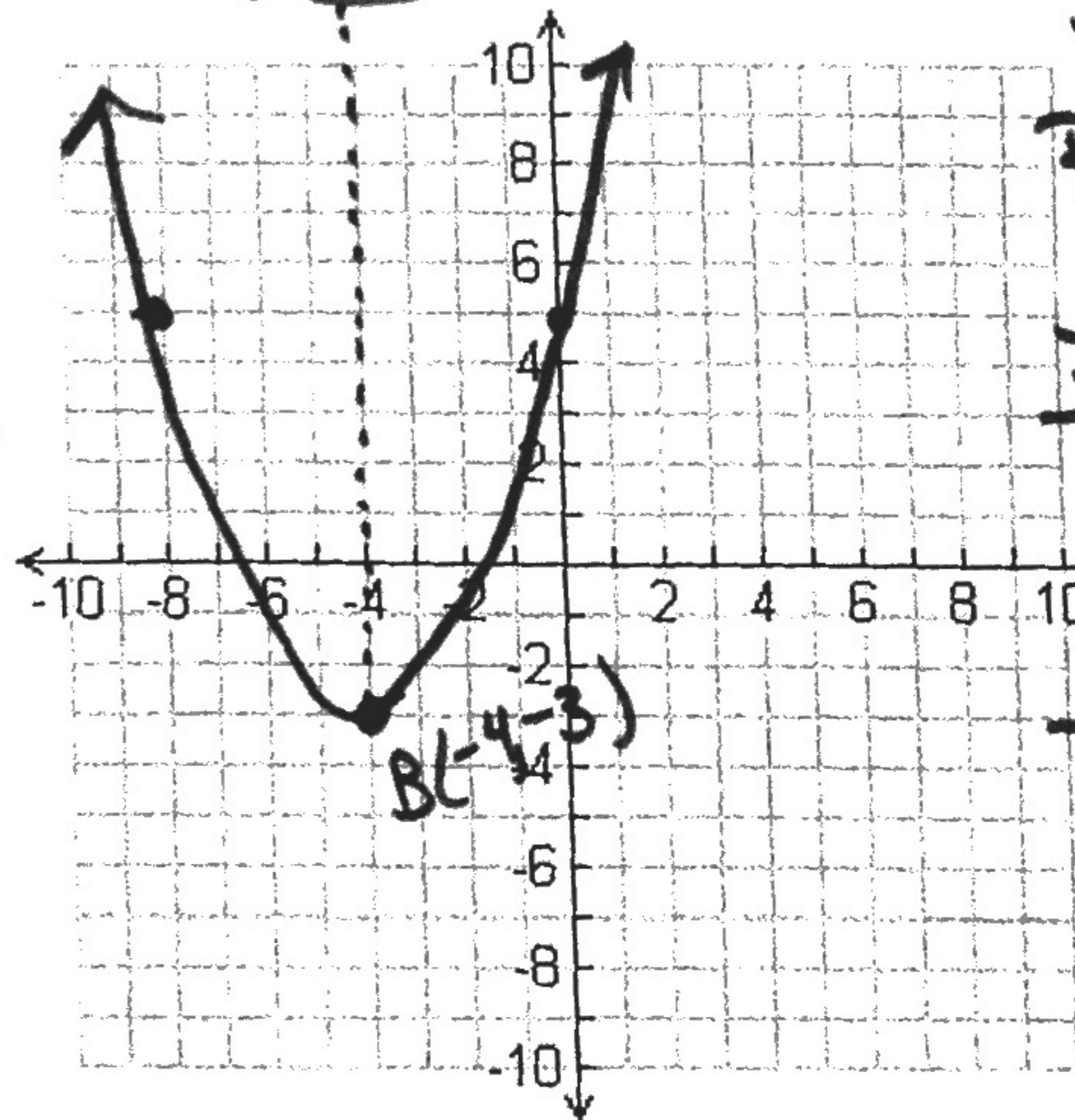
Incr.
 $(-\infty, 2)$

Decr.
 $(2, \infty)$



8. $f(x) = \frac{1}{2}(x + 4)^2 - 3$

$$C. x = -4$$



$$D: \{x \mid \mathbb{R}\}$$

$$R: \{y \mid y \geq -3\}$$

Incr.
 $(-4, \infty)$

Decr.
 $(-\infty, -4)$