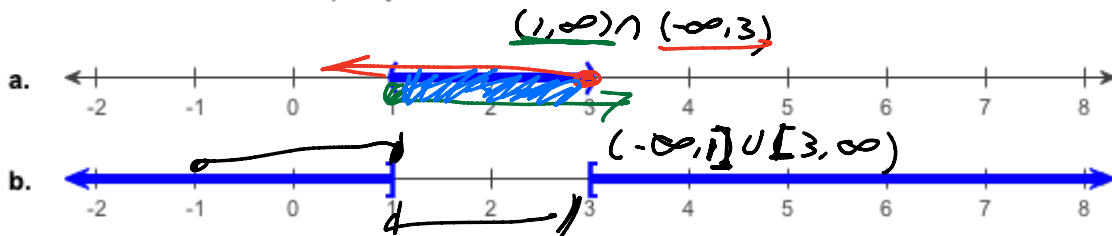


Use a vertical format to find the product.

$$\begin{array}{r}
 2x^3 + x^2 + 4x + 8 \\
 \underline{ x + 3} \\
 6x^3 + 3x^2 + 12x + 24 \\
 2x^4 + x^3 + 4x^2 + 8x \\
 \hline
 2x^4 + 7x^3 + 7x^2 + 20x + 24
 \end{array}$$

$$\begin{array}{l}
 (x+3)(2x^3 + x^2 + 4x + 8) \\
 2x^4 + x^3 + 4x^2 + 8x + 6x^3 + 3x^2 + 12x + 24 \\
 \hline
 2x^4 + 7x^3 + 7x^2 + 20x + 24
 \end{array}$$

Write an absolute value inequality for which the interval shown is the solution.



@ $(1, 3)$ $1 < x < 3$
 Half way = 2

Example
 $|x+1| < 5$

$$\begin{array}{l}
 -5 < x+1 < 5 \\
 -1 \quad -1 \quad -1
 \end{array}$$

$$-6 < x < 4$$

works

$$\boxed{|x-2| < 1} \Rightarrow 1 < x < 3$$

$$\begin{array}{l}
 1 < x < 3 \\
 -a < x+c < b \\
 -c \quad -c \quad -c \\
 -a-c=1 \quad a-c=3 \\
 -(3+c)-c=1 \quad a=3+c
 \end{array}$$

$$-3-c-c=1 \Rightarrow -3-2c=1 \Rightarrow -2c=4 \Rightarrow c=-2 \quad a=3-2=1$$

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$$|x+c| \geq a \quad x+c \geq a \quad \text{or} \quad x+c \leq -a$$

$$x \leq 1 \quad \text{or} \quad x \geq 3 \quad x \geq a-c \quad \text{or} \quad x \leq -a-c$$

$$|x-2| \geq 1 \quad 3+c=a \quad 1 = -a-c$$

$$x-2 \geq 1 \quad \text{or} \quad x-2 \leq -1 \quad 3=a-c \quad \text{or} \quad 1 = -3-c-c$$

$$1 = -3-2c \quad a=3-2=1$$

$$4 = -2c \quad c = -2$$

Solve the absolute value inequality.

$$|x+8| \leq 7 \quad -7 \leq x+8 \leq 7$$

$$-8 \quad -8 \quad -8$$

Rewrite the inequality without absolute value bars. Select the correct choice below and fill in the answer box(es) to complete your choice. (Simplify your answers.)

$$-15 \leq x \leq -1$$

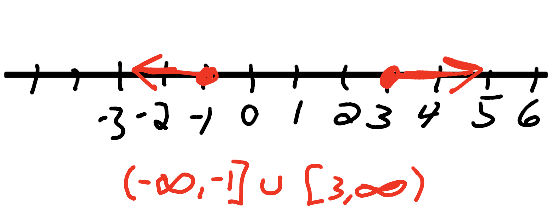
$$[-15, -1]$$

$$|2-2x| \geq 4 \quad 2-2x \geq 4 \quad \text{or} \quad 2-2x \leq -4$$

$$-2 \quad -2 \quad -2 \quad -2$$

When 2 times a number is subtracted from 2, the absolute value of the difference is at least 4. Use interval notation to express the set of all numbers that satisfy this condition.

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.



$$\frac{-2x}{2} \geq \frac{2}{2} \quad \text{or} \quad \frac{-2x}{2} \leq \frac{-6}{2}$$

$$x \leq -1 \quad \text{or} \quad x \geq 3$$

Solve the absolute value inequality.

$$3 + \left| 5 - \frac{x}{5} \right| \geq 15$$

-3 -3

$$\left| 5 - \frac{x}{5} \right| \geq 12$$

$$5 - \frac{x}{5} \geq 12 \quad \text{or} \quad 5 - \frac{x}{5} \leq -12$$

-5 -5 -5 -5

$$\cancel{5 - \frac{x}{5} \geq 7.5} \quad \text{or} \quad \cancel{5 - \frac{x}{5} \leq -17.5}$$

↓ ↓

$$x \leq -35 \quad \text{or} \quad x \geq 85$$



$$(-\infty, -35] \cup [85, \infty)$$

Use interval notation to represent all values of x satisfying the given conditions.

$$y = 7 - \left| \frac{x}{2} + 2 \right| \text{ and } y \text{ is at most } 4$$

↓

$$y \leq 4$$

$$7 - \left| \frac{x}{2} + 2 \right| \leq 4 \Rightarrow - \left| \frac{x}{2} + 2 \right| \leq -3$$

-7 -7 -1 -1

$$\left| \frac{x}{2} + 2 \right| \geq 3$$

$$\frac{x}{2} + 2 \leq -3 \quad \text{or} \quad \frac{x}{2} + 2 \geq 3$$