

Supplementary:

S1. What is the definition of an inequality?

Symbolic Solutions:

In exercises 15 and 17, solve each equation or inequality. State a conclusion using a complete sentence and set notation.

15. $y_1(x) = x - 2$

a. $y_1(x) = 0$

b. $y_1(x) < 0$

c. $y_1(x) > 0$

17. $y_1(x) = -2x + 6$

a. $y_1(x) = 0$

b. $y_1(x) < 0$

c. $y_1(x) > 0$

In exercises 23 - 39, solve the inequality symbolically. State the set of solutions using both interval and set notation.

$$23. 4 - 3x \leq -\frac{2}{3}$$

$$29. \frac{3x - 2}{-2} \leq \frac{x - 4}{-5}$$

$$27. \frac{5}{2}(2x - 3) < 6 - 2x$$

$$39. \frac{3}{4}(2t - 5) \leq \frac{1}{2}(4t - 6) + 1$$

Domains of Functions:

In exercises 45 - 51 odd, write the domain of f in set-builder notation.

$$45. f(x) = \sqrt{2x - 1}$$

$$49. f(x) = \sqrt{5(x - 2) + 1}$$

Numerical Solutions:

In exercise 53 - 57 solve the inequality numerically. State a conclusion using a complete sentence and set notation.

53. $-2x + 6 \leq 0$

55. $x - 3 > 0$

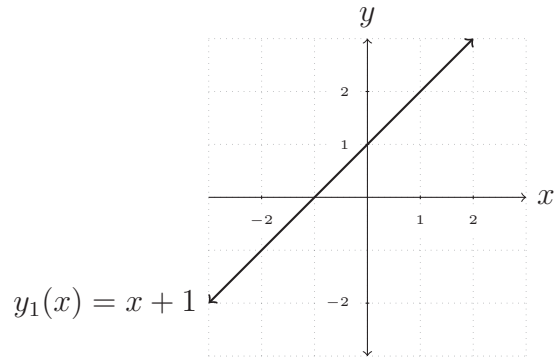
54. $3x - 1 < 8$

57. $2x - 1 \geq 3$

Graphical Solutions:

In exercises 59 and 61, use the graph of y_1 to solve each equation or inequality. State a conclusion using a complete sentence and set notation.

59.

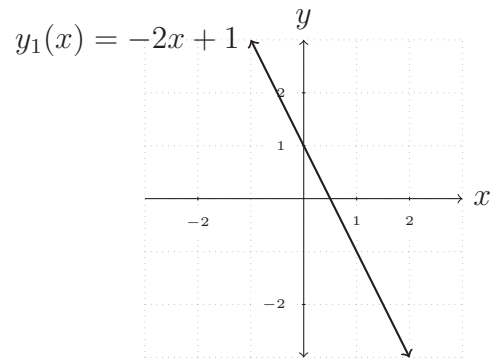


a. $y_1(x) = 0$

b. $y_1(x) < 0$

c. $y_1(x) > 0$

61.



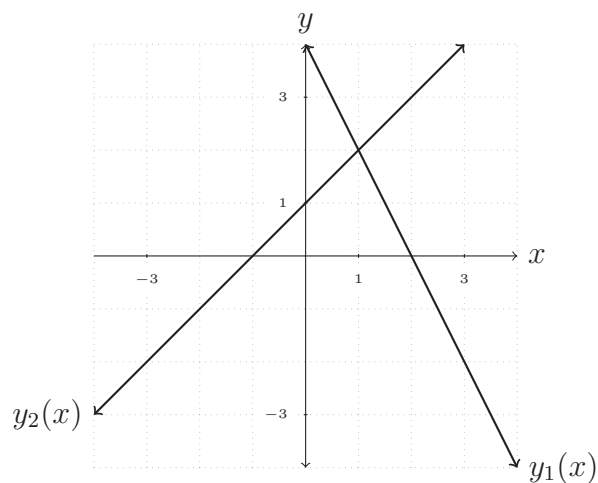
a. $y_1(x) = 0$

b. $y_1(x) < 0$

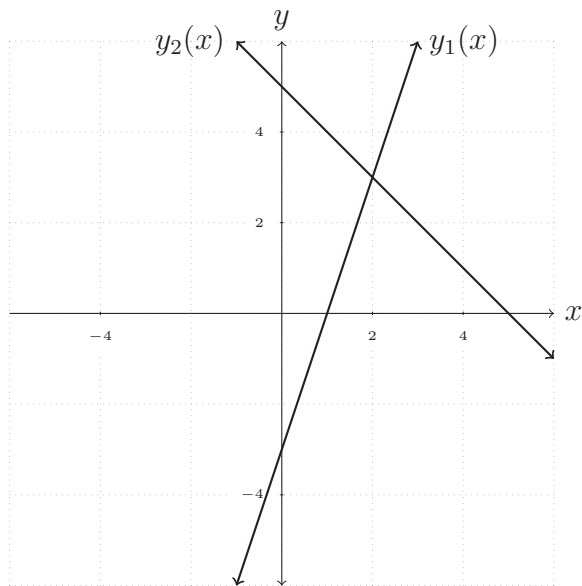
c. $y_1(x) > 0$

In exercises 63 and 65, use the graph of y_1 and y_2 to solve the inequality. State your conclusion using a complete sentence and set notation.

63. $y_1(x) \leq y_2(x)$



65. $y_1(x) > y_2(x)$



67. Car 1 and Car 2 are traveling in the same direction. Their distances in miles north of St. Louis, Missouri, after x hours are shown in the graph on page 187, where $x \leq 8$.

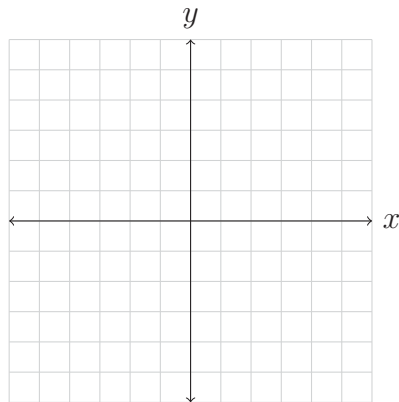
a. Which car is traveling faster? Explain.

b. How many hours elapse before the two cars are the same distance from St. Louis? How far are they from St. Louis when the equality occurs?

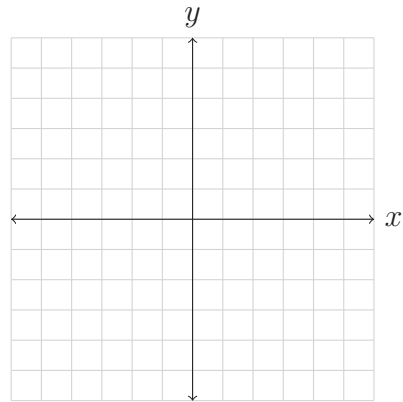
c. During what time interval is Car 2 farther from St. Louis than Car 1?

In exercises 71 - 81 odd, solve the inequality graphically. Set up a function to represent each side of the inequality and then properly label your graphs with the proper function. Write your solutions using set-builder notation. For 79 and 81 you do not need to copy down the graph that you get with your calculator.

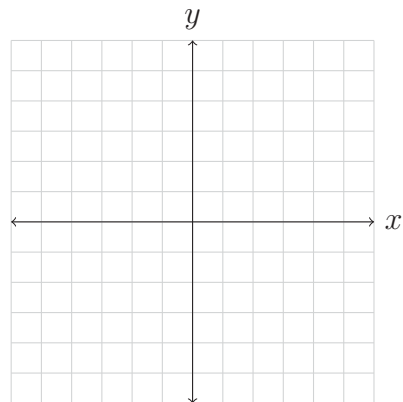
71. $x - 1 < 0$



73. $2x \geq 0$



75. $4 - 2x \leq 8$

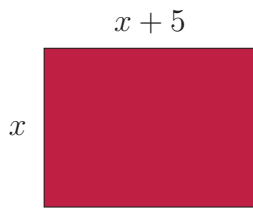


79. $2(x + 2) + 5 < -x$

81. $25(x - 1995) + 100 \leq 0$

Applications:

101. Find the values for x which allow for the perimeter of the figure to be less than 50 feet.



105. If the temperature on the ground is 60°F , the air temperature x miles high is given by $T(x) = 60 - 19x$. Determine the altitudes at which the air temperature is greater than 0°F . Support your answer numerically and graphically.