p. 131/ # 1- 4, 6, 7, 10

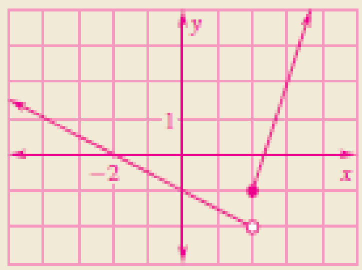
1. $f(-4)$ -1

2. $f(2)$ 2

3. $f(3)$ $\frac{5}{2}$

4. $f(5)$ 41

6.



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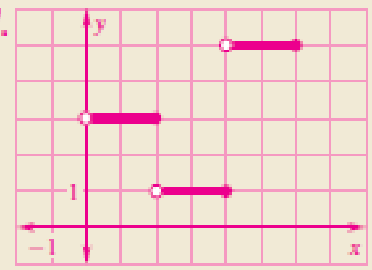

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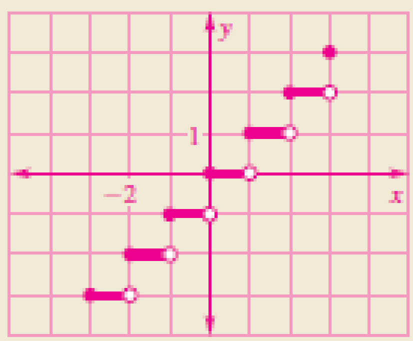


STEP 1 Determine fines

Extension 2.7 Writing and Graphing Piecewise Functions

Complete the table below.

mi/h over speed limit	Fine ($)
1	75
5	75
8	75

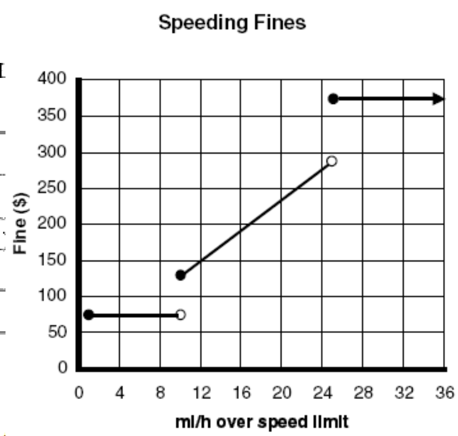
mi/h over speed limit	Fine ($)
10	130
12	150
20	230

mi/h over speed limit	Fine ($)
25	375
28	375
32	375

STEP 2 Write equations

Let x represent the number of miles per hour by which the speed limit is exceeded. I dollars.

For the domain ...	An equation for the fine is ...
$1 \le x < 10$	$y =$ 75
$10 \le x < 25$	$y =$ 130 + 10 $(x -$ 10 This simplifies to $y =$ 30 + 10x.
$x \geq 25$	$y =$ 375



DRAW CONCLUSIONS

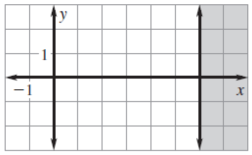
1. the rate of change (in dollars per mile per hour) in the fine with respect to the amount by which the speed exceeds the speed limit
2. Yes; no vertical line intersects the graph in more than one point, even when the different sections of the graph are considered together.
3. Yes; $1 \le x$.
4. Yes; $y = a|x| + k$ is described by the equations of two different functions over different parts of its domain: (1) $y = ax + k$ when $x \ge 0$, and (2) $y = a(-x) + k$, or $y = -ax + k$ when $x < 0$.
5. $I(p) = 0.03p$ if $1000 \le p < 5000$, $I(p) = 0.035p$ if $5000 \le p < 10{,}000$, and $I(p) = 0.04p$ if $10{,}000 \le p$

p. 135 / 3, 4, 8 - 14, 19 - 24, 29, 30, 33, 34, 44, 46, 47

3. solution, not a solution

4. not a solution, solution

8.



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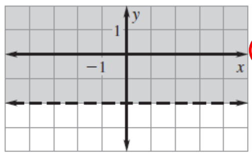

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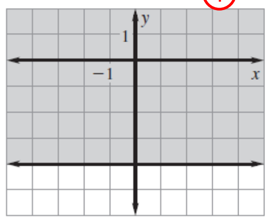

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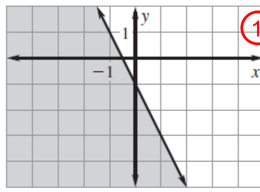

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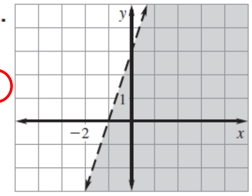

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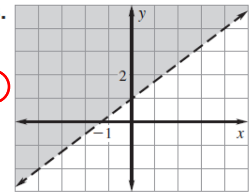

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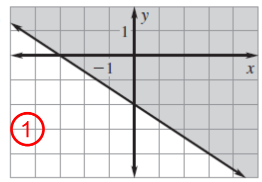
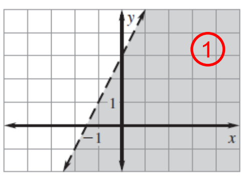
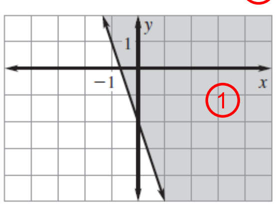


19. The boundary line should be a dashed line.

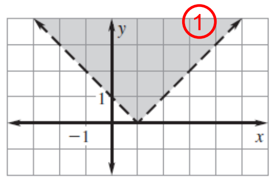


20. The other side of the boundary line should be shaded.

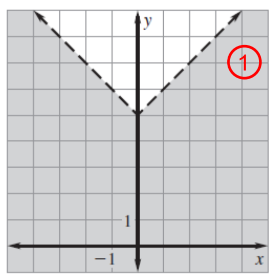


21. C

22.



23.



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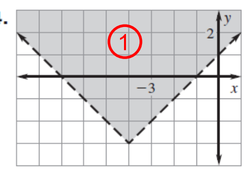
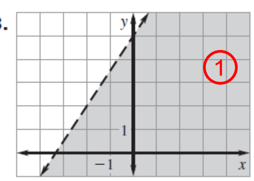


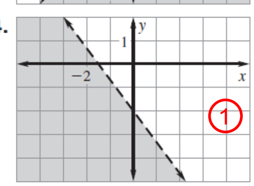
29. solution, not a solution

30. not a solution, solution

33.

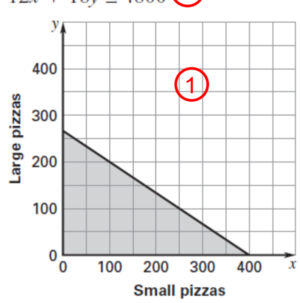


34.



34 points total

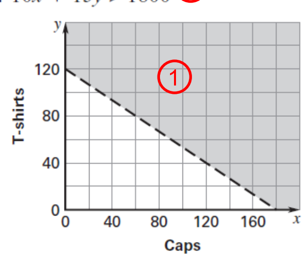
44. $12x + 18y \le 4800$



Sample answer: 12 large and 382 small, 120 large and 220 small, 0 large and 400 small

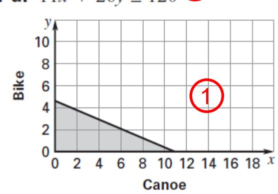
34 points total

46. $10x + 15y > 1800$



You would have to take the shirt sales, $15y$, times 0.4 and the cap sales, $10x$, times 0.3. The total sales, 1800, would change to a total of 600; $3x + 6y > 600$

47. a. $11x + 26y \le 120$



b. *Sample answer*: 2 days canoeing and 5 days biking, 3 days canoeing and 2 days biking, 2 days canoeing and 2 days biking