Name _____ Date _____ Class _____

Unit 1 Characteristics of Functions

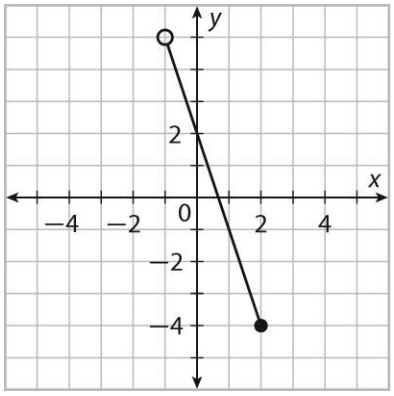
MODULE 1 Analyzing Functions

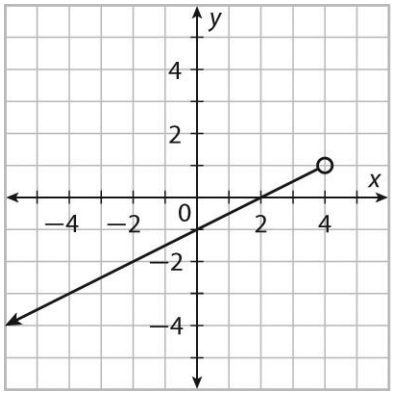
LESSON 1-1

Practice and Problem Solving: A/B

1. Inequality: $x > -3$; Set Notation: $\{x \mid x > -3\}$; Interval Notation: $(-3, +\infty)$
2. Inequality: $15 < x \leq 26$; Set Notation: $\{x \mid 15 < x \leq 26\}$; Interval Notation: $(15, 26)$
3. Domain: Inequality: $-\infty < x < +\infty$; Set Notation: $\{x \mid -\infty < x < +\infty\}$; Interval Notation: $(-\infty, +\infty)$

   Range: Inequality: $-\infty < y \leq 3$; Set Notation: $\{y \mid -\infty < y \leq 3\}$; Interval Notation: $(-\infty, 3]$

   End Behavior: As $x \to +\infty$, $f(x) \to -\infty$; As $x \to -\infty$, $f(x) \to -\infty$
4. 

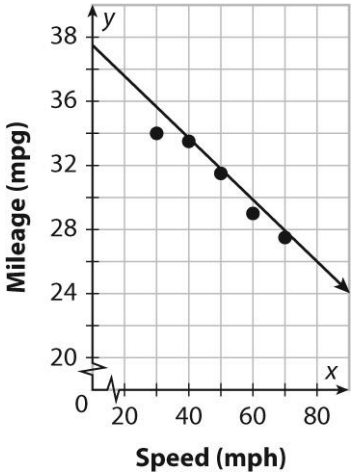
   Range: $(-4, 5)$
5. 

   Range: $(-\infty, 1)$

LESSON 1-2

Practice and Problem Solving: A/B

1. Increasing: $\{x \mid -2 < x < -1\}$ and $\{x \mid 1 < x < 3\}$; Decreasing: $\{x \mid -1 < x < 1\}$
2. Local Max: $(-1, 4)$; Local Min: $(1, 0)$
3. $x = -2$ and $x = 1$
4. Domain: $\{x \mid -2 \leq x \leq 3\}$; Range: $\{y \mid 0 \leq y \leq 20\}$
5. Possible answer: $f(x) = -0.175x + 39.85$



6. $f(55) \approx 30.225$ or about 30 mpg
7. Interpolation; 55 mph falls within the model's domain.

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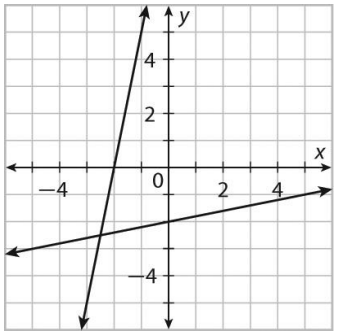
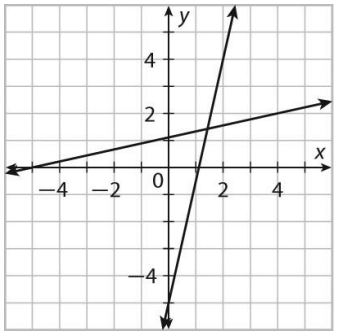
LESSON 1-3

Practice and Problem Solving: A/B

1. $f^{-1}(x) = -\dfrac{x-10}{4}$
2. $g^{-1}(x) = -\dfrac{x+10}{15}$
3. $h^{-1}(x) = 4x + 12$
4. $j^{-1}(x) = \dfrac{6x-1}{3}$
5. $f^{-1}(x) = \dfrac{x-10}{5}$



6. $f^{-1}(x) = \dfrac{2}{9}x + \dfrac{10}{9}$



7. yes
8. no
9. yes