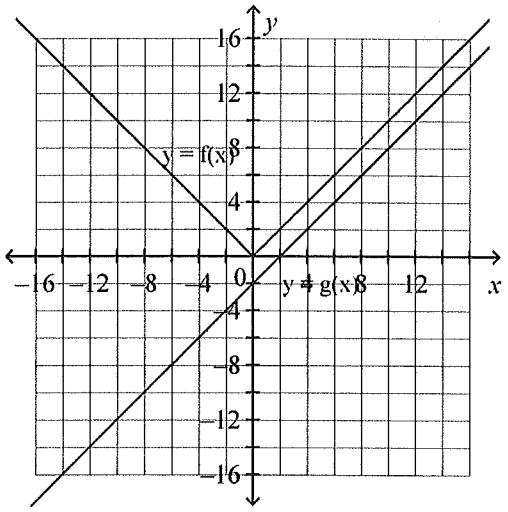
Name: _____ Class: _____ Date: _____ ID: A

Functions Midterm Review Quiz

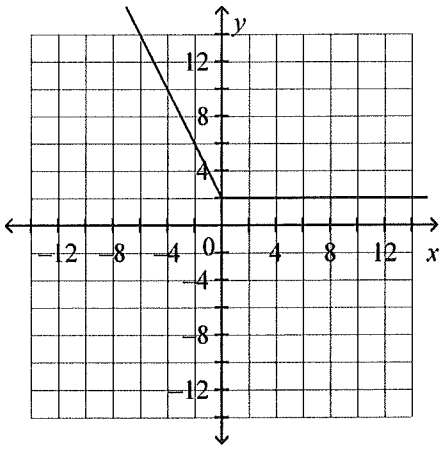
Multiple Choice

Identify the choice that best completes the statement or answers the question.

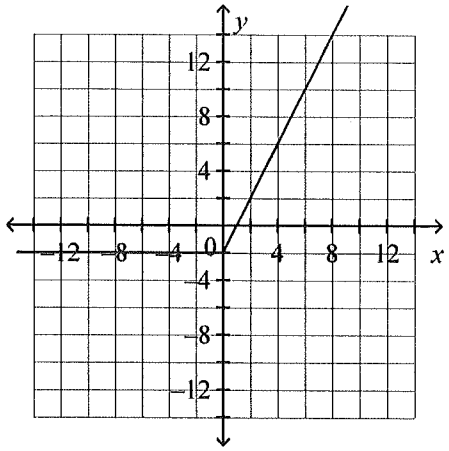
____ **1.** Here are the graphs of $y = f(x)$ and $y = g(x)$. Which graph below is the graph of $y = f(x) - g(x)$?



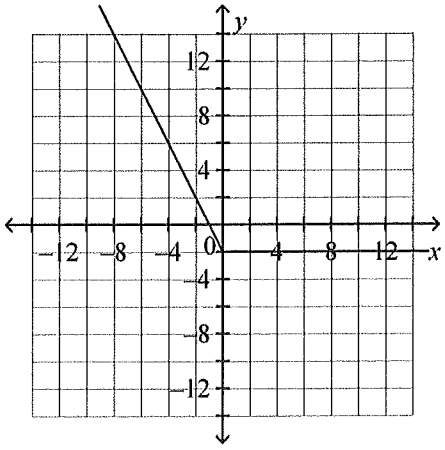
A.



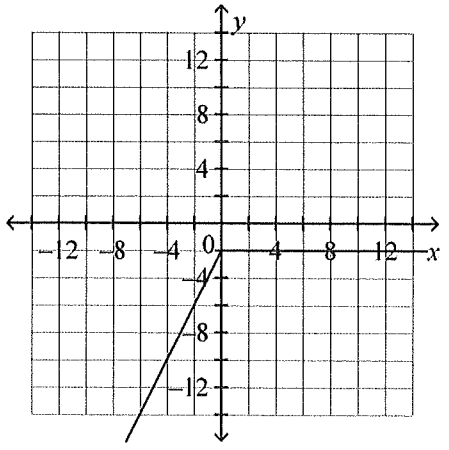
C.



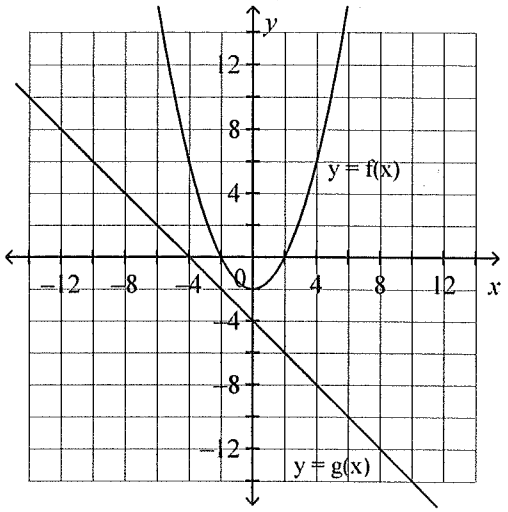
B.



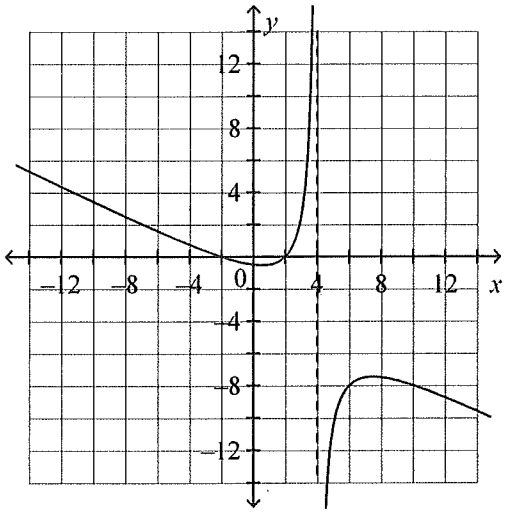
D.



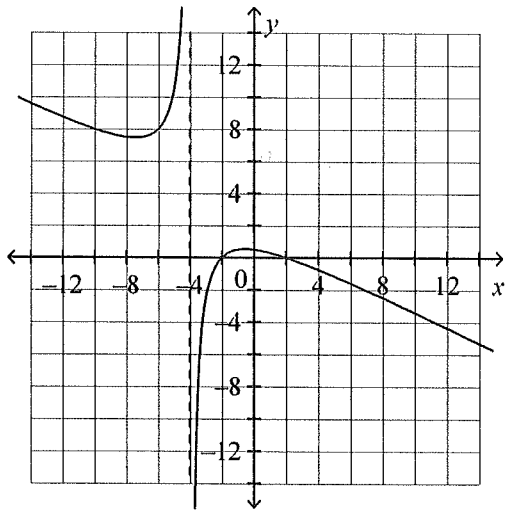
____ **2.** Here are the graphs of $y = f(x)$ and $y = g(x)$. Which graph below is the graph of $y = \dfrac{f(x)}{g(x)}$?



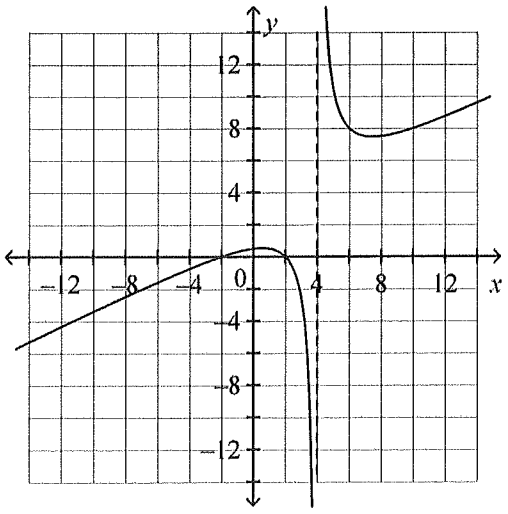
A.



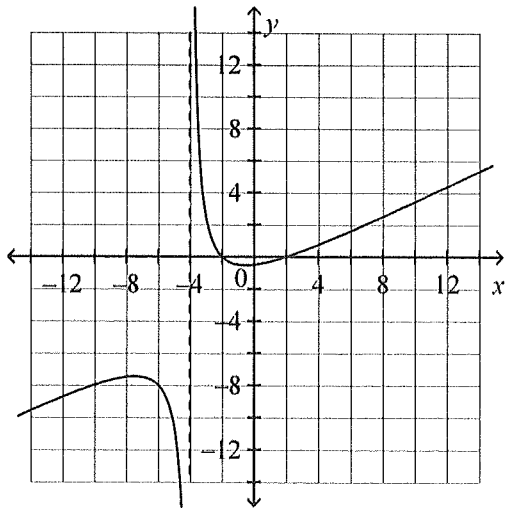
C.



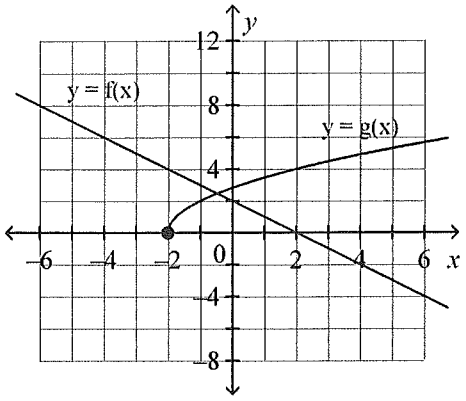
B.



D.



____ **3.** Use the graphs of $y = f(x)$ and $y = g(x)$. What are the domain and range of $y = f(x) - g(x)$?



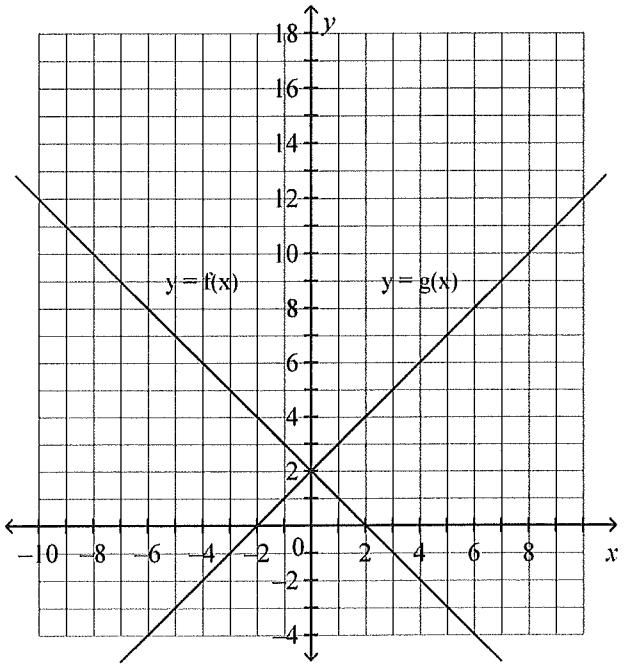
A. Domain: $x \in \mathbb{R}$
Range: $y \leq -2$

B. Domain: $x \leq -2$
Range: $y \leq 4$

C. Domain: $x \geq -2$
Range: $y \in \mathbb{R}$

D. Domain: $x \geq -2$
Range: $y \leq 4$

____ **4.** Use the graphs of $y = f(x)$ and $y = g(x)$. What are the domain and range of $y = f(x) \cdot g(x)$?



A. Domain: $x \in \mathbb{R}$
Range: $y \in \mathbb{R}$

B. Domain: $x \in \mathbb{R}$
Range: $y \leq 4$

C. Domain: $x \in \mathbb{R}$
Range: $y \leq 2$

D. Domain: $x \geq 4$
Range: $y \in \mathbb{R}$

____ 5. Given $h(x) = 5x^2 + 2x - 3$, which pair of equations below are possible equations for $f(x)$ and $g(x)$ so that $h(x) = f(x) - g(x)$?

A. $f(x) = 5x^2$
$g(x) = 2x - 3$

B. $f(x) = 4x^2$
$g(x) = x^2 + 2x - 3$

C. $f(x) = 4x^2$
$g(x) = -x^2 - 2x - 3$

D. $f(x) = 5x^2$
$g(x) = -2x + 3$

____ 6. Given $f(x) = |x - 5|$ and $g(x) = \frac{1}{x}$, what is the domain and range of $h(x) = f(x) + g(x)$?

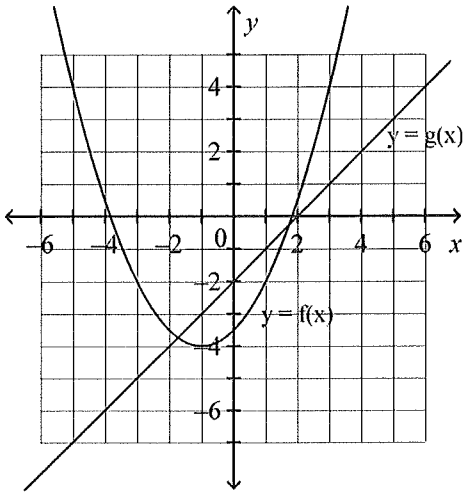
A. Domain: $x \neq 0$
Range: $y \in \mathbb{R}$

B. Domain: $x \geq 5$
Range: $y \leq 5$

C. Domain: $x \neq 0$
Range: $y \leq 5$

D. Domain: $x \neq 5$
Range: $y \in \mathbb{R}$

____ 7. Given the graphs of $y = f(x)$ and $y = g(x)$, what is the value of $f\big(g(3)\big)$?



A. 4 **B.** –2 **C.** 2 **D.** –4

____ 8. For the functions $f(x) = x + 3$ and $g(x) = x^2 - 3$, which expression has the greatest value?

A. $f\big(g(4)\big)$ **B.** $f\big(g(-5)\big)$ **C.** $g\big(f(2)\big)$ **D.** $g\big(f(-3)\big)$

____ 9. Given the functions $f(x) = 2x + 4$ and $g(x) = \sqrt{x+5}$, what is the value of a for which $f\big(g(a)\big) = 16$?

A. 31 **B.** 36 **C.** –26 **D.** 35

____ 10. The function $h(x) = g\big(f(x)\big)$ is the composite of $f(x) = 2 - x$ and $g(x) = \frac{1}{\sqrt{x}}$.

What is the domain of $h(x)$?

A. $-2 < x < 0$

B. $x < 2$

C. $x < -2$ or $x > 0$

D. $x > 0$

Functions Midterm Review Quiz
Answer Section

MULTIPLE CHOICE

1. ANS: A PTS: 0 DIF: Easy
REF: 4.1 Combining Functions Graphically LOC: 12.RF1
TOP: Relations and Functions KEY: Conceptual Understanding | Procedural Knowledge

2. ANS: C PTS: 0 DIF: Moderate
REF: 4.1 Combining Functions Graphically LOC: 12.RF1
TOP: Relations and Functions KEY: Conceptual Understanding | Procedural Knowledge

3. ANS: D PTS: 0 DIF: Moderate
REF: 4.1 Combining Functions Graphically LOC: 12.RF1
TOP: Relations and Functions KEY: Conceptual Understanding | Procedural Knowledge

4. ANS: B PTS: 0 DIF: Moderate
REF: 4.1 Combining Functions Graphically LOC: 12.RF1
TOP: Relations and Functions KEY: Conceptual Understanding | Procedural Knowledge

5. ANS: D PTS: 0 DIF: Easy
REF: 4.2 Combining Functions Algebraically LOC: 12.RF1
TOP: Relations and Functions KEY: Conceptual Understanding | Procedural Knowledge

6. ANS: A PTS: 0 DIF: Moderate
REF: 4.2 Combining Functions Algebraically LOC: 12.RF1
TOP: Relations and Functions KEY: Conceptual Understanding | Procedural Knowledge

7. ANS: B PTS: 0 DIF: Easy
REF: 4.3 Introduction to Composite Functions LOC: 12.RF1
TOP: Relations and Functions KEY: Conceptual Understanding | Procedural Knowledge

8. ANS: B PTS: 0 DIF: Moderate
REF: 4.3 Introduction to Composite Functions LOC: 12.RF1
TOP: Relations and Functions KEY: Conceptual Understanding | Procedural Knowledge

9. ANS: A PTS: 0 DIF: Moderate
REF: 4.3 Introduction to Composite Functions LOC: 12.RF1
TOP: Relations and Functions KEY: Conceptual Understanding | Procedural Knowledge

10. ANS: B PTS: 0 DIF: Easy
REF: 4.4 Determining Restrictions on Composite Functions LOC: 12.RF1
TOP: Relations and Functions KEY: Conceptual Understanding | Procedural Knowledge