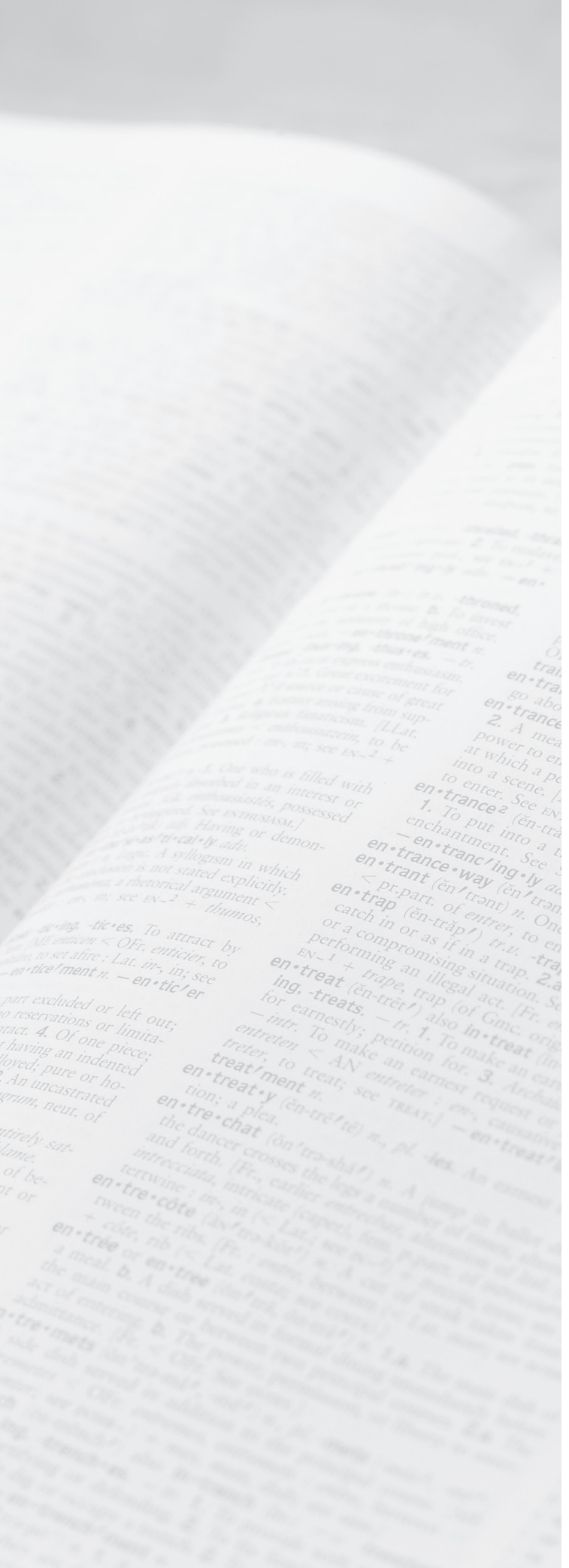

Chapter 5
Functions and Domains Drill

FUNCTIONS AND DOMAINS DRILL

1. If $f(x) = \sqrt{x}$, $g(x) = x^2 - 36$, and $h(x) = x^3 + 2$, then $f(g(h(2))) =$

   (A) –10
   (B) –8
   (C) 0
   (D) 8
   (E) 10

2. What is the domain of $f(x) = \dfrac{1}{\sqrt[4]{(x^2 - 5x)}}$?

   (A) $0 < x < 5$
   (B) All real numbers; $x \neq 0$
   (C) All real numbers; $x \neq 5$
   (D) All real numbers; $x \neq 0, 5$
   (E) $x < 0$ and $x > 5$

3. Find the domain of $f(x) = \sqrt[4]{(1 - x^2)}$.

   (A) $(-\infty,-1)$
   (B) $(-1,1)$
   (C) $(1,\infty)$
   (D) $(-\infty,1)$
   (E) $(-1,\infty)$

4. If $f(x) = 3x + 2$ and $g(x) = (x - 2)^2$, then $g(f(0)) =$

   (A) –14
   (B) –4
   (C) 0
   (D) 4
   (E) 14

5. What is the domain of $\dfrac{1}{x^2 - 4}$?

   (A) All real numbers
   (B) All real numbers ; $x \neq 0$
   (C) All real numbers ; $x \neq 2$
   (D) All real numbers ; $x \neq -2$
   (E) All real numbers ; $x \neq \pm 2$

6. Consider the function, $f(x) = x^3 + \dfrac{5}{2}x^2 - 2x + 6$. Which of the following must be false?

   (A) There is a relative maximum at $x = -2$.
   (B) There is an absolute maximum on the interval [2,4] at $x = 4$.
   (C) There is a relative minimum at $x = \dfrac{1}{3}$.
   (D) There is an absolute minimum at $x = \dfrac{1}{3}$, on the interval [–4, 1].
   (E) There is an absolute maximum at $x = -2$, on the interval [–4, 1].

7. Consider the function $f(x) = \begin{cases} x^3 - 5, & x \leq 2 \\ x^2 + 2, & x > 2 \end{cases}$. What type of discontinuity occurs at $x = 2$?

   (A) point
   (B) essential
   (C) removable
   (D) jump
   (E) There is no discontinuity at $x = 2$.

8. For what value of a is the function $f(x)=\begin{cases} ax^2+2, & x<1 \\ x^3-1, & x\geq 1 \end{cases}$ continuous at $x = 1$?

(A) –3
(B) –2
(C) –1
(D) 0
(E) 1

9. Given the function $f(x)=f(x)=\begin{cases} x^3+2x^2-5, & x<1 \\ ax^2+7x-4, & x\geq 1 \end{cases}$, at what value of a will the function be continuous?

(A) –10
(B) –7
(C) –5
(D) 1
(E) 5