

**Gateway Exam #2 Practice Problems**  
**Finding Limits Algebraically**

1. Evaluate the following limit.

$$\lim_{h \rightarrow 0} \frac{(h-5)^2 - 25}{h}$$

- (a) 0
- (b) 10
- (c) -10
- (d)  $-\infty$
- (e) The given limit does not exist.

2. Evaluate the following limit.

$$\lim_{x \rightarrow -4^-} \frac{|x+4|}{x+4}$$

- (a) -1
- (b)  $\infty$
- (c) 0
- (d) 1
- (e) The given limit does not exist.

3. Evaluate the following limit.

$$\lim_{t \rightarrow 9} \frac{9-t}{3-\sqrt{t}}$$

- (a)  $3 + \sqrt{3}$
- (b) 0
- (c) 9
- (d) 6
- (e) The given limit does not exist.

4. Evaluate the following limit.

$$\lim_{x \rightarrow 3} \frac{1}{(x-3)^2}$$

- (a)  $-\infty$
- (b)  $\infty$
- (c) 3
- (d) 0
- (e) The given limit does not exist.

5. Evaluate the following limit.

$$\lim_{x \rightarrow -3} \frac{x^2 - x + 12}{x + 3}$$

- (a) 7
- (b) -7
- (c) -4
- (d)  $\infty$
- (e) The given limit does not exist.

6. Evaluate the following limit.

$$\lim_{x \rightarrow 2} \frac{|x - 2|}{x - 2}$$

- (a) 0
- (b)  $\infty$
- (c)  $-\infty$
- (d) 4
- (e) The given limit does not exist.

7. Evaluate the following limit.

$$\lim_{x \rightarrow 2} \frac{\frac{1}{x} - \frac{1}{2}}{x - 2}$$

- (a)  $-\frac{1}{4}$
- (b)  $\frac{1}{4}$
- (c) 4
- (d) -4
- (e) The given limit does not exist.

8. Evaluate the following limit.

$$\lim_{x \rightarrow 0} \frac{1}{x}$$

- (a)  $\infty$
- (b)  $-\infty$
- (c) 0
- (d) 1
- (e) The given limit does not exist.

9. Evaluate the following limit.

$$\lim_{x \rightarrow -4} |x + 4|$$

- (a) -4
- (b) 4
- (c) 0
- (d) 8

(e) The given limit does not exist.

10. Evaluate the following limit.

$$\lim_{x \rightarrow 4} \frac{x^2 - 16}{x + 4}$$

- (a) 8
- (b) 16
- (c) 0
- (d) -4
- (e) The given limit does not exist.

11. Evaluate the following limit.

$$\lim_{x \rightarrow 5^+} \frac{6}{x - 5}$$

- (a)  $\infty$
- (b)  $-\infty$
- (c) 0
- (d) 6
- (e) The given limit does not exist.

12. Evaluate the following limit.

$$\lim_{x \rightarrow 2} 3x^2 - 1$$

- (a) 4
- (b) -1
- (c)  $\infty$
- (d) 11
- (e) The given limit does not exist.

**Answers:**

- |       |       |      |      |       |
|-------|-------|------|------|-------|
| 1. c  | 2. a  | 3. d | 4. b | 5. b  |
| 6. e  | 7. a  | 8. e | 9. c | 10. c |
| 11. a | 12. d |      |      |       |