Calculus 1 - Limits

Worksheet 1

Evaluating Simple Limits with Substitution, Part 1

Calculus 1 - Limits - Worksheet 1 – Evaluating Simple Limits with Substitution, Part 1

1. Evaluate this limit using substitution.

$$\lim_{x \to 4}(-3x + 11)$$

2. Evaluate this limit using substitution.

$$\lim_{x \to 5}(5x + 12)$$

3. Evaluate this limit using substitution.

$$\lim_{x \to -3}(2x^2)$$

4. Evaluate this limit using substitution.

$$\lim_{x \to -2} (7x - 9)$$

5. Evaluate this limit using substitution.

$$\lim_{x \to 3} \left(\frac{x + 1}{x + 3} \right)$$

6. Evaluate this limit using substitution.

$$\lim_{x \to 1} \left(\frac{-4x + 2}{5x + 1} \right)$$

7. Evaluate this limit using substitution.

$$\lim_{x \to -4} \left(\frac{2x + 3}{x + 9} \right)$$

8. Evaluate this limit using substitution.

$$\lim_{x \to 1} \left(\frac{5x - 7}{x + 6} \right)$$

9. Evaluate this limit using substitution.

$$\lim_{x \to -2} (8x + 2)$$

10. Evaluate this limit using substitution.

$$\lim_{x \to 4}(3x + 5)$$

11. Evaluate this limit using substitution.

$$\lim_{x \to 1}\left(\frac{x + 1}{3x + 5}\right)$$

12. Evaluate this limit using substitution.

$$\lim_{x \to 2}(-4x + 3)$$

13. Evaluate this limit using substitution.

$$\lim_{x \to -1} \left(\frac{5x - 3}{2x + 4} \right)$$

14. Evaluate this limit using substitution.

$$\lim_{x \to 7} (-6x + 17)$$

15. Evaluate this limit using substitution.

$$\lim_{x \to 3} (-7x + 2)$$

Answers - Calculus 1 - Limits - Worksheet 1 – Evaluating Simple Limits with Substitution, Part 1

1. Evaluate this limit using substitution.

$$\lim_{x\to 4}(-3x+11)$$

Substitute 4 into the limit for x.

$$\lim_{x\to 4}(-3x+11) = -3(4)+11 = -1$$

Answer: $\lim_{x\to 4}(-3x+11) = -1$

2. Evaluate this limit using substitution.

$$\lim_{x\to 5}(5x+12)$$

Substitute 5 into the limit for x.

$$\lim_{x\to 5}(5x+12) = 5(5)+12 = 37$$

Answer: $\lim_{x\to 5}(5x+12) = 37$

3. Evaluate this limit using substitution.

$$\lim_{x\to -3}(2x^2)$$

Substitute -3 into the limit for x.

$$\lim_{x\to -3}(2x^2) = 2(-3)^2 = 18$$

Answer: $\lim_{x\to -3}(2x^2) = 18$

4. Evaluate this limit using substitution.

$$\lim_{x \to -2} (7x - 9)$$

Substitute -2 into the limit for x.

$$\lim_{x \to -2} (7x - 9) = 7(-2) - 9 = -23$$

Answer: $\lim_{x \to -2} (7x - 9) = -23$

5. Evaluate this limit using substitution.

$$\lim_{x \to 3} \left(\frac{x + 1}{x + 3} \right)$$

Substitute 3 into the limit for x.

$$\lim_{x \to 3} \left(\frac{x + 1}{x + 3} \right) = \frac{3 + 1}{3 + 3} = \frac{4}{6} = \frac{2}{3}$$

Answer: $\lim_{x \to 3} \left(\frac{x+1}{x+3} \right) = \frac{2}{3}$

6. Evaluate this limit using substitution.

$$\lim_{x \to 1} \left(\frac{-4x + 2}{5x + 1} \right)$$

Substitute 1 into the limit for x.

$$\lim_{x \to 1} \left(\frac{-4x + 2}{5x + 1} \right) = \frac{-4(1) + 2}{5(1) + 1} = -\frac{2}{6} = -\frac{1}{3}$$

Answer: $\lim_{x \to 1} \left(\frac{-4x+2}{5x+1} \right) = -\frac{1}{3}$

7. Evaluate this limit using substitution.

$$\lim_{x \to -4} \left(\frac{2x + 3}{x + 9} \right)$$

Substitute -4 into the limit for x.

$$\lim_{x \to -4} \left(\frac{2x + 3}{x + 9} \right) = \frac{2(-4) + 3}{-4 + 9} = \frac{-5}{5} = -1$$

Answer: $\lim_{x \to -4} \left(\frac{2x+3}{x+9} \right) = -1$

8. Evaluate this limit using substitution.

$$\lim_{x \to 1} \left(\frac{5x - 7}{x + 6} \right)$$

Substitute 1 into the limit for x.

$$\lim_{x \to 1} \left(\frac{5x - 7}{x + 6} \right) = \frac{5(1) - 7}{1 + 6} = -\frac{2}{7}$$

Answer: $\lim_{x \to 1} \left(\frac{5x-7}{x+6} \right) = -\frac{2}{7}$

9. Evaluate this limit using substitution.

$$\lim_{x \to -2} (8x + 2)$$

Substitute -2 into the limit for x.

$$\lim_{x \to -2} (8x + 2) = 8(-2) + 2 = -14$$

Answer: $\lim_{x \to -2} (8x + 2) = -14$

10. Evaluate this limit using substitution.

$$\lim_{x \to 4}(3x + 5)$$

Substitute 4 into the limit for x.

$$\lim_{x \to 4}(3x + 5) = 3(4) + 5 = 17$$

Answer: $\lim_{x \to 4}(3x + 5) = 17$

11. Evaluate this limit using substitution.

$$\lim_{x \to 1}\left(\frac{x + 1}{3x + 5}\right)$$

Substitute 1 into the limit for x.

$$\lim_{x \to 1}\left(\frac{x + 1}{3x + 5}\right) = \frac{1 + 1}{3(1) + 5} = \frac{2}{8} = \frac{1}{4}$$

Answer: $\lim_{x \to 1}\left(\frac{x+1}{3x+5}\right) = \frac{1}{4}$

12. Evaluate this limit using substitution.

$$\lim_{x \to 2}(-4x + 3)$$

Substitute 2 into the limit for x.

$$\lim_{x \to 2}(-4x + 3) = -4(2) + 3 = -5$$

Answer: $\lim_{x \to 2}(-4x + 3) = -5$

13. Evaluate this limit using substitution.

$$\lim_{x \to -1} \left(\frac{5x - 3}{2x + 4} \right)$$

Substitute -1 into the limit for x.

$$\lim_{x \to -1} \left(\frac{5x - 3}{2x + 4} \right) = \frac{5(-1) - 3}{2(-1) + 4} = -\frac{8}{2} = -4$$

Answer: $\lim_{x \to -1} \left(\frac{5x-3}{2x+4} \right) = -4$

14. Evaluate this limit using substitution.

$$\lim_{x \to 7} (-6x + 17)$$

Substitute 7 into the limit for x.

$$\lim_{x \to 7} (-6x + 17) = -6(7) + 17 = -25$$

Answer: $\lim_{x \to 7} (-6x + 17) = -25$

15. Evaluate this limit using substitution.

$$\lim_{x \to 3} (-7x + 2)$$

Substitute 3 into the limit for x.

$$\lim_{x \to 3} (-7x + 2) = -7(3) + 2 = -19$$

Answer: $\lim_{x \to 3} (-7x + 2) = -19$