

HW 8: Unit 2.2 – Algebraic Limits

Evaluate the following limits algebraically. Show work.

1. $\lim_{x \rightarrow 2} \frac{x^2 + 5x + 6}{x + 2} = \underline{\hspace{2cm}}$

2. $\lim_{x \rightarrow 0} \frac{(x+4)^2 - 16}{x} = \underline{\hspace{2cm}}$

3. $\lim_{x \rightarrow 1} \frac{x-1}{x^2-1} = \underline{\hspace{2cm}}$

4. $\lim_{x \rightarrow 2} \frac{x^2 - 3x + 2}{x^2 - 4} = \underline{\hspace{2cm}}$

5. $\lim_{x \rightarrow 0} \frac{5x^3 + 8x^2}{3x^4 - 16x^2} = \underline{\hspace{2cm}}$

6. $\lim_{x \rightarrow 0} \frac{\frac{1}{x+2} - \frac{1}{2}}{x} = \underline{\hspace{2cm}}$

7. $\lim_{x \rightarrow 2} \begin{cases} 2x^2 - 4x, & x < 2 \\ 4 \sin\left(\frac{\pi x}{4}\right), & x > 2 \end{cases} = \underline{\hspace{2cm}}$

8. $\lim_{x \rightarrow -2} \begin{cases} 2 - x, & x < -2 \\ x^2 - 2x, & x > -2 \end{cases} = \underline{\hspace{2cm}}$

9. $\lim_{x \rightarrow 1} \frac{\sqrt{x+3}-2}{x-1} = \underline{\hspace{2cm}}$

10. $\lim_{x \rightarrow 3^+} \frac{x+3}{x-3} = \underline{\hspace{2cm}}$

11. $\lim_{x \rightarrow 3^+} \frac{2x^2 - 9x + 9}{x^2 - 9} = \underline{\hspace{2cm}}$

12. $\lim_{x \rightarrow 0} \frac{\sqrt{x+1}-1}{x} = \underline{\hspace{2cm}}$

13. $\lim_{x \rightarrow 3} \frac{\frac{1}{x} - \frac{1}{3}}{x-3} = \underline{\hspace{2cm}}$

14. $\lim_{x \rightarrow 4} \frac{\frac{1}{4} + \frac{1}{x}}{x+4} = \underline{\hspace{2cm}}$

15. $\lim_{x \rightarrow 25} \frac{x-25}{\sqrt{x}-5} = \underline{\hspace{2cm}}$

16. $\lim_{x \rightarrow 9} \frac{9-x}{3-\sqrt{x}} = \underline{\hspace{2cm}}$