Algebraic Techniques to Evaluate Limits When the Denominator Equals Zero

Step 1: Substitute in the value into the limit.
Step 2: Apply an algebraic technique.
Step 3: Substitute the value into the simplified limit.

Directions: Evaluate each limit.

1) $\lim_{x \to 2} \frac{x^2 - 3x + 2}{x^2 + x - 6} =$

Algebraic Technique: Factoring

2) $\lim_{x \to 1} \frac{x^3 - 1}{x - 1} =$

Algebraic Technique: Factoring

3) $\lim_{x\to 0}\frac{\sqrt{x+1}-1}{x}=$

Algebraic Technique: Multiply the Fraction by the Conjugate of the Numerator

4) $\lim_{x\to 7}\frac{5-\sqrt{4+3x}}{x-7}=$

Algebraic Technique: Multiply the Fraction by the Conjugate of the Numerator

5) $\lim_{x\to 0} \dfrac{x^2+3x-1}{x} + \dfrac{1}{x} =$

Algebraic Technique: Combine Fractions

6) $\lim_{h\to 0} \dfrac{1}{h}\left(\dfrac{6+h}{3+2h} - 2\right) =$

Algebraic Technique: Combine Fractions

7) $\lim_{x \to 3} \frac{|x-3|}{x-3} =$

Algebraic Technique: One-Sided Limits