

**Due:** Friday, 24 September 2025

**Directions:** The work you submit should be entirely your own. Provide a clear proof for the following limit statements.

1. Prove the following:

$$\lim_{x \rightarrow \infty} \frac{1}{(x-2)^2} = 0$$

2. Prove the following:

$$\lim_{x \rightarrow \infty} \frac{1}{2x+5} = 0$$

3. Prove the following:

$$\lim_{x \rightarrow 2^+} \frac{7x}{3x-6} = \infty$$

4. Prove the following:

$$\lim_{x \rightarrow \infty} \frac{3x}{5x-7} = \frac{2}{5}$$

5. Prove the following:

$$\lim_{x \rightarrow \infty} x^2 - 3x = \infty$$