

Homework 1 - Due 10:00 AM on Tuesday August 6
Solutions should be complete, clear and organized. Make sure you justify your work.

1. Prove the following statement by contradiction.

The sum of two even numbers is always even.

2. Prove the statement using the ϵ, δ definition of the limit.

$$\lim_{x \rightarrow 2} x^2 - 5x + 3 = -3$$

3. Prove the statement using the ϵ, M definition of the limit.

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

4. Evaluate

$$\lim_{x \rightarrow \infty} \frac{12x - 13x^2 + 5x^4}{2x^4 - 3x + 1}$$

5. Evaluate

$$\lim_{x \rightarrow 0} x^2 e^{\sin(\frac{1}{x})}$$