

Week 1: May 12nd - May 18th

Suggested Problems

§1.2 #28, 31, 32, 33, 71, 73, 74 & 76

§1.4 #5, 7, 16, 33, 34, 43, 46 & 65

§1.5 #17, 18, 28, 29, 42, 43, 52, 56, 62 & 76

§1.7 #14, 27, 30, 34, 35, 39, 43 & 59

(Use #57 & 58 for #59)

§1.6 #8, 10, 29, 30, 36, 38, 59, 61, 75, 82, 83, 84 & 87

§1.3 #5, 13, 39, 41, 45, 46, 48, 55 & 58

§1.8 #5, 10, 11, 17 & 19

(#19 is hard)

Assigned Problems

Due **May 19th**, in lecture.

1. Prove that,

$$\frac{1}{1 - \sin \theta} + \frac{1}{1 + \sin \theta} = 2 \sec^2 \theta.$$

2. Find the (shortest) distance between $(-1, 3)$ and the line $y = 4x - 5$.
3. The Fibonacci numbers are defined recursively:

$$\mathcal{F}_1 = 1, \quad \mathcal{F}_2 = 1, \quad \mathcal{F}_n = \mathcal{F}_{n-1} + \mathcal{F}_{n-2} \text{ for all } n \geq 3.$$

(The first few Fibonacci numbers are: 1, 1, 2, 3, 5, 8, 13, 21, ...)

Prove that for all $j \geq 1$, \mathcal{F}_{4j} is divisible by 3.