

Introductory Material

1. Questions -

- What causes the seasons?
- Do obvious things need to be proven? Explain.
- If all you will teach is high school, why take any courses beyond that?
Why not let high school graduates teach high school immediately?
- A parabola is half a hyperbola.

Need for Rigor

1. Some Examples -

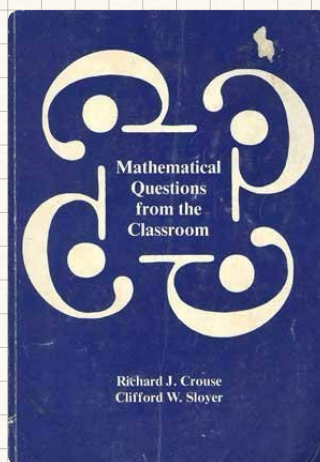
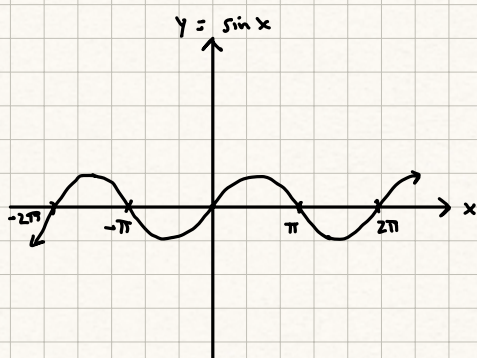
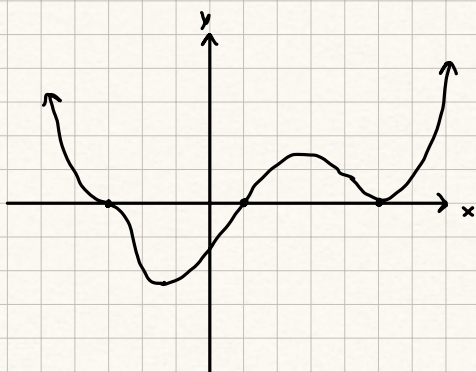
Ex: $\frac{64}{16} = 4$ $\frac{65}{16} = 5 \times$

Ex: $\lim_{x \rightarrow 8} \frac{1}{(x-8)^2} = \infty$

$\lim_{x \rightarrow 5} = \frac{1}{(x-5)^2} = \text{LN or LN}$

Ex: $\frac{d}{dx} \sin x^2 = \cos x^2 + \sin 2x$

Ex: $y = (x-1)(x+3)^3(x-5)^2$



$$y = \dots (x+2\pi)(x+\pi)(x-0)(x-\pi)(x-2\pi) \dots$$

$$= x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$$