

LIMITS NUMERICALLY

1. PRESS “Y =”

2. ENTER the function in Y_1

make sure both numerator and denominators of rational expressions are in PARENTHESES!!

3. GRAPH function

4. PRESS Clear

5. PRESS “VARS”

6. SELECT “Y-VARS”

7. SELECT “ Y_1 ”

8. ENTER value in *PARENTHESES!*

ex. $Y_1(0.001)$

1.9 Limits Determined by Tables

USING YOUR CALCULATOR, FILL IN EACH OF THE FOLLOWING TABLES TO FIVE DECIMAL PLACES. USING THE INFORMATION FROM THE TABLE, DETERMINE EACH LIMIT. (FOR THE TRIGONOMETRIC FUNCTIONS, YOUR CALCULATOR MUST BE IN *radian* MODE.)

164. $\lim_{x \rightarrow 0} \frac{\sqrt{x+3} - \sqrt{3}}{x}$

| | | | | | | |
|-----------------------------------|------|-------|--------|-------|------|-----|
| x | -0.1 | -0.01 | -0.001 | 0.001 | 0.01 | 0.1 |
| $\frac{\sqrt{x+3} - \sqrt{3}}{x}$ | | | | | | |

165. $\lim_{x \rightarrow -3} \frac{\sqrt{1-x} - 2}{x+3}$

| | | | | | | |
|------------------------------|------|-------|--------|--------|-------|------|
| x | -3.1 | -3.01 | -3.001 | -2.999 | -2.99 | -2.9 |
| $\frac{\sqrt{1-x} - 2}{x+3}$ | | | | | | |

166. $\lim_{x \rightarrow 0} \frac{\sin x}{x}$

| | | | | | | |
|--------------------|------|-------|--------|-------|------|-----|
| x | -0.1 | -0.01 | -0.001 | 0.001 | 0.01 | 0.1 |
| $\frac{\sin x}{x}$ | | | | | | |

167. $\lim_{x \rightarrow 0} \frac{1 - \cos x}{x}$

| | | | | | | |
|------------------------|------|-------|--------|-------|------|-----|
| x | -0.1 | -0.01 | -0.001 | 0.001 | 0.01 | 0.1 |
| $\frac{1 - \cos x}{x}$ | | | | | | |

168. $\lim_{x \rightarrow 0} (1+x)^{1/x}$

| | | | | | | |
|---------------|------|-------|--------|-------|------|-----|
| x | -0.1 | -0.01 | -0.001 | 0.001 | 0.01 | 0.1 |
| $(1+x)^{1/x}$ | | | | | | |

169. $\lim_{x \rightarrow 1} x^{1/(1-x)}$

| | | | | | | |
|---------------|-----|------|-------|-------|------|-----|
| x | 0.9 | 0.99 | 0.999 | 1.001 | 1.01 | 1.1 |
| $x^{1/(1-x)}$ | | | | | | |

ANSWERS!

164. $\frac{1}{2\sqrt{3}}$

165. $-\frac{1}{4}$

166. 1

167. 0

168. e

169. $\frac{1}{e}$