

## Appendix B

### Common Calculus Operations

Before you enter the following examples, you should reset your TI-89 to its default settings by pressing  $\boxed{2\text{nd}} \boxed{\text{MEM}} \boxed{\text{F1}} \text{3:Default} \boxed{\text{ENTER}} \boxed{\text{ENTER}}$  and then clear all one-letter variables by pressing  $\boxed{2\text{nd}} \boxed{\text{F6}} \text{1:Clear a-z} \boxed{\text{ENTER}}$ .

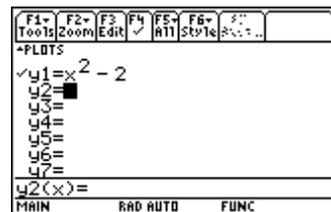
If you want to clear the Home screen and the entry line before beginning a new example, press  $\boxed{\text{HOME}}$  to move to the Home screen and then press  $\boxed{\text{F1}} \text{8:Clear Home} \boxed{\text{CLEAR}}$ .

#### Graphing functions

Graph  $y = x^2 - 2$  in a  $[-5,5] \times [-5,10]$  window.

1. Enter the function in the Y= Editor.

$\boxed{\blacklozenge} \boxed{\text{Y=}} \boxed{\text{CLEAR}} \boxed{\text{X}} \boxed{\wedge} \boxed{2} \boxed{-} \boxed{2} \boxed{\text{ENTER}}$



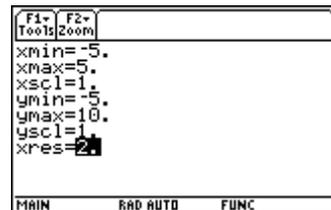
2. Select the Window Editor by pressing  $\boxed{\blacklozenge} \boxed{\text{WINDOW}}$ .

3. Enter the x-window values:

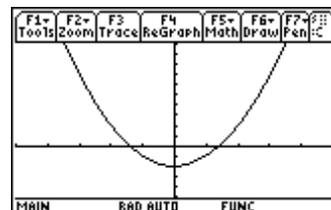
$\boxed{(-)} \boxed{5} \boxed{\text{ENTER}} \boxed{5} \boxed{\text{ENTER}} \boxed{1} \boxed{\text{ENTER}}$

4. Enter the y-window values:

$\boxed{(-)} \boxed{5} \boxed{\text{ENTER}} \boxed{10} \boxed{\text{ENTER}} \boxed{1} \boxed{\text{ENTER}}$



5. Graph the function by pressing  $\boxed{\blacklozenge} \boxed{\text{GRAPH}}$ .

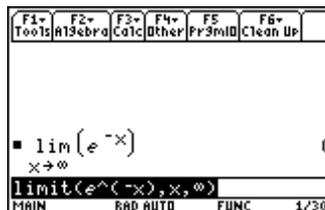


## Limits

Find  $\lim_{x \rightarrow \infty} (e^{-x})$ .

From the Home screen, press:

**CATALOG** **limit** (  $\blacktriangleright$  ) [  $e^x$  ] (  $\leftarrow$  ) **X** ) , **X** ,  $\blacktriangleright$  [  $\infty$  ] ) **ENTER**



## The first derivative of a function

Take the first derivative of  $y = \frac{1}{x}$  with respect to  $x$ .

From the Home screen, press:

**HOME** **2nd** [  $d$  ] **1**  $\div$  **X** , **X** ) **ENTER**

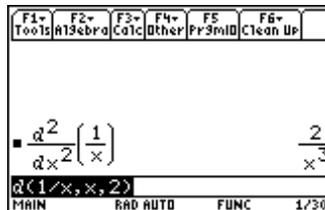


## The second derivative of a function

Take the second derivative of  $y = \frac{1}{x}$  with respect to  $x$ .

From the Home screen, press:

**HOME** **2nd** [  $d$  ] **1**  $\div$  **X** , **X** , **2** ) **ENTER**

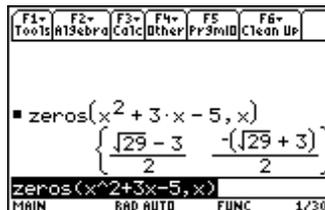


## The roots of an equation

Find the real roots of  $y = x^2 + 3x - 5$ .

From the Home screen, press:

**CATALOG** **zeros** ( **X**  $\wedge$  **2** + **3** **X** - **5** , **X** ) **ENTER**



### Indefinite integrals

Evaluate  $\int \tan(x)dx$ .

From the Home screen, press:

$\boxed{2\text{nd}} \boxed{[f]}$   $\boxed{2\text{nd}} \boxed{[\text{TAN}]}$   $\boxed{X}$   $\boxed{)}$   $\boxed{,}$   $\boxed{X}$   $\boxed{)}$   $\boxed{\text{ENTER}}$

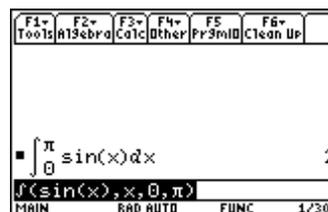


### Definite integrals

Evaluate  $\int_0^{\pi} \sin x dx$ .

From the Home screen, press:

$\boxed{2\text{nd}} \boxed{[f]}$   $\boxed{2\text{nd}} \boxed{[\text{SIN}]}$   $\boxed{X}$   $\boxed{)}$   $\boxed{,}$   $\boxed{X}$   $\boxed{,}$   $\boxed{0}$   $\boxed{,}$   $\boxed{2\text{nd}} \boxed{[\pi]}$   $\boxed{)}$   $\boxed{\text{ENTER}}$

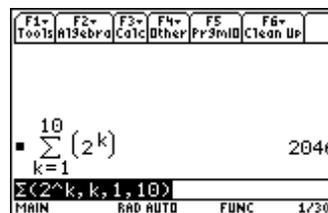


### Series

Evaluate  $\sum_{k=1}^{10} 2^k$ .

From the Home screen, press:

$\boxed{\text{CATALOG}}$   $\boxed{\Sigma}$   $\boxed{2}$   $\boxed{\wedge}$   $\boxed{\text{alpha}}$   $\boxed{K}$   $\boxed{,}$   $\boxed{\text{alpha}}$   $\boxed{K}$   $\boxed{,}$   $\boxed{1}$   $\boxed{,}$   $\boxed{10}$   $\boxed{)}$   $\boxed{\text{ENTER}}$



### Taylor series

Find the third degree Taylor polynomial for  $y = \ln x$  expanded about  $x = 1$ .

From the Home screen, press:

$\boxed{\text{CATALOG}}$   $\boxed{\text{taylor}}$   $\boxed{(}$   $\boxed{2\text{nd}} \boxed{[\text{LN}]}$   $\boxed{X}$   $\boxed{)}$   $\boxed{,}$   $\boxed{X}$   $\boxed{,}$   $\boxed{3}$   $\boxed{,}$   $\boxed{1}$   $\boxed{)}$   $\boxed{\text{ENTER}}$

