The natural base “e”

What is *e*? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Use a calculator to evaluate the expression. Write all decimal places (do not round).

*e* =\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Which mathematical concept does this make you think of? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Like pi, the natural base “e” is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ number. It can be approximated to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Because of its natural limiting value, it is often used as the base of the exponential function in realistic applications.

We can graph exponential growth functions with base e.

EX 1  EX 2 

|  |  |
| --- | --- |
| x | y |
|   |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |  |
| --- | --- |
| x | y |
|   |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Graphing: Natural Base/ Euler’s Number

Graph and analyze the following exponential growth functions. Your graph should accurately show the y –intercept and the asymptote. Determine at least two additional points on the right side of the graph. USE A PENCIL!

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [image] 1.

|  |  |
| --- | --- |
| x | f(x) |
| -2 |  |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

y-intercept \_\_\_\_\_\_\_\_ asymptote \_\_\_\_\_\_\_\_\_domain \_\_\_\_\_\_\_\_ range \_\_\_\_\_\_\_\_\_ end behavior: as x → +$\infty $, f(x) → \_\_\_\_\_\_\_\_\_\_, and  as x → -$\infty $, f(x) → \_\_\_\_\_\_\_\_\_\_[image] | [image]2.

|  |  |
| --- | --- |
| x | f(x) |
| -2 |  |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

y-intercept \_\_\_\_\_\_\_\_ asymptote \_\_\_\_\_\_\_\_\_domain \_\_\_\_\_\_\_\_ range \_\_\_\_\_\_\_\_\_\_ end behavior: as x → +$\infty $, f(x) → \_\_\_\_\_\_\_\_\_\_, and   as x → -$\infty $, f(x) → \_\_\_\_\_\_\_\_\_\_[image] |
| 3.

|  |  |
| --- | --- |
| x | f(x) |
| -2 |  |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

y-intercept \_\_\_\_\_\_\_\_ asymptote \_\_\_\_\_\_\_\_\_domain \_\_\_\_\_\_\_\_ range \_\_\_\_\_\_\_\_\_ end behavior: as x → +$\infty $, f(x) → \_\_\_\_\_\_\_\_\_\_, and  as x → -$\infty $, f(x) → \_\_\_\_\_\_\_\_\_\_ | 4.

|  |  |
| --- | --- |
| x | f(x) |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |

y-intercept \_\_\_\_\_\_\_\_ asymptote \_\_\_\_\_\_\_\_\_domain \_\_\_\_\_\_\_\_ range \_\_\_\_\_\_\_\_\_ end behavior: as x → +$\infty $, f(x) → \_\_\_\_\_\_\_\_\_\_, and   as x → -$\infty $, f(x) → \_\_\_\_\_\_\_\_\_\_ |