

MATH 101(04)
FALL 2001

Graphing exercises

13 September 2001

1. Find a function whose graph is a parabola passing through the points $(3, 0)$, $(6, 0)$, and $(0, 12)$. Plot the graph.
2. Find a cubic function whose graph contains the points $(2, 0)$, $(4, 0)$, $(5, 0)$, and $(0, 10)$. Plot the graph.
3. On the same set of axes, plot the graphs of $y = x^2$, $y = x^4$, $y = x^6$, and $y = x^8$. Pick a plotting domain that makes the picture look reasonably nice. Which of the functions is largest, and which is smallest? Can you make some general statements about the even power functions? What would the graph of $y = x^{1000}$ look like?
4. On the same set of axes, plot the graphs of $y = x^3$, $y = x^5$, $y = x^7$, and $y = x^9$. Pick a plotting domain that makes the picture look reasonably nice. Which of the functions is largest, and which is smallest? Can you make some general statements about the odd power functions? What would the graph of $y = x^{1001}$ look like?
5. On the same set of axes, plot the graphs of $y = x^{\frac{1}{2}}$, $y = x^{\frac{1}{4}}$, $y = x^{\frac{1}{6}}$ and $y = x^{\frac{1}{8}}$. Which of the functions is largest, and which is the smallest? What general statements can you make about the even root functions?
6. On the same set of axes, plot the graphs of $y = 2^x$ and $y = (1/2)^x$. Which is larger? Can you explain the symmetry?