

**Topic 7: Exercises on Graphing**  
**Level 1**

1. Sketch (showing critical points) the graphs of: a)  $y = |x + 1|$ ; b)  $y = |x| + 1$ .

2. Sketch (showing critical points) the graphs of: a)  $y = x^{1/2}$ ; b)  $y = x^{1/2} - 2$ .

3. Sketch (showing critical points) the graph of  $y = |x + 2|$ .

4. Sketch the graph of  $y = \sin|x|$ .

5. Sketch the graph of  $y = |\sin x|$ .

6. For the function  $f(x) = x^2$  (an even function) sketch the graphs of:  
a)  $y = f(x)$ , b)  $y = f(-x)$ , c)  $y = -f(x)$ .

7. For the function  $f(x) = x^3$  (an odd function) sketch the graphs of:  
a)  $y = f(x)$ , b)  $y = -f(x)$ , c)  $y = f(-x)$ .

8. Use the graph of  $y = \cos^{-1} x$  to sketch the graphs of:

a)  $y = \cos^{-1}(-x)$       b)  $y = -\cos^{-1} x$ .

9. Use the graph of  $y = \ln x$  to sketch the graph of  $y = \ln|x|$ .

10. Use the graph of  $y = \cos x$  to sketch the graph of  $y = \cos x - 1$ .

11. Use the graphs of  $y = x$  and  $y = e^{-x}$  to sketch the graph of  $y = x + e^{-x}$ .

12. Use the graphs of  $y = x$  and  $y = \ln x$  to sketch the graph of  $y = x + \ln x$ .