Topic 7: Exercises on Graphing
Level 2, Part 1

1. For $n \geq 2$, an even positive integer, sketch the graphs of: a) $y = x^n$; b) $y = x^{-n}$.

a) The minimum turning point is (0, 0).
b) $x = 0$ is a vertical asymptote; y=0 is a horizontal asymptote.

2. For $n \geq 2$, an even positive integer, sketch the graphs of: a) $y = x^{1/n}$; b) $y = x^{-1/n}$.

b) $x = 0$ is a vertical asymptote; y=0 is a horizontal asymptote

3. For $n \geq 3$, an odd positive integer, sketch the graphs of: a) $y = x^n$; b) $y = x^{-n}$.

a) Point of inflexion at (0,0)
b) x=0 is a vertical asymptote; y=0 is a horizontal asymptote

4. For $n \geq 3$, an odd positive integer, sketch the graphs of: a) $y = x^{1/n}$; b) $y = x^{-1/n}$.

a) (0, 0) is a critical point.
b) x=0 is a vertical asymptote; y=0 is a horizontal asymptote.

5. Sketch (showing critical points) the graph of $y = x(2+\sqrt{x})$.

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

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

8. Use the graph of $f(x) = 4 - x^2$ (an even function) to sketch (showing critical points) the graph of $y = |f(x)|$.

9. Use the graph $y = x(x+2)$ to sketch showing critical points the graph of $y = |x(x+2)|$.

10. Sketch the graph of $|x| + |y| = 1$.

11. Use the graph of $y = \cos x$ to sketch the graph of $y = \cos(x - \frac{\pi}{2})$.

12. Use the graph of $y = \sin^{-1} x$ to sketch the graph of: $y = \sin^{-1} x - \frac{\pi}{2}$.