

Topic 7: Exercises on Graphing
Level 2, Part 2

1. Use the graphs of $y = \ln x$ and $y = \frac{1}{x}$ to sketch the graph of $y = \ln x + \frac{1}{x}$.

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

3. Sketch the graph of $y = x^2 + \frac{1}{x^2}$.

4. Sketch the graph of $y = x^2 - \frac{1}{x}$.

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

6. Sketch the graph of $y = \frac{1}{2}(e^x - e^{-x})$.

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

a) $y = \frac{1}{2} \cos^{-1} x$, b) $y = \cos^{-1} \left(\frac{x}{2} \right)$.

8. Sketch the graph of $y = x^2 \ln x$.

9. Use the graphs of $y = x$ and $y = e^x$ to sketch the graph of $y = \frac{e^x}{x}$.

10. Sketch the graph of $y = \frac{1}{\sin^{-1} x}$.

11. Use the graphs of $y = x$ and $y = \ln x$ to sketch the graph of $y = \frac{\ln x}{x}$.

12. Show that $\frac{x^2}{x+1} = x - 1 + \frac{1}{x+1}$. Hence sketch the graph of $y = \frac{x^2}{x+1}$.

13. Sketch the graph of $y = \frac{x^2}{x^2 - 1}$.

Maximum turning point at (0,-2)