

Sangam SKM College - Nadi

Year 13

Mathematics

Worksheet 4

Questions

1. **Sketch** the graph of the polynomial $y = \frac{1}{9} (x - 3)^2 (x + 1)^3 (x - 1)$ **clearly showing the x and y intercepts, turning points and the inflection point on the x axis.**

2. Consider the **top-heavy** function $f(x) = \frac{-x^2 - 2x - 1}{x - 1}$

a) Find the **x and y intercepts**.

b) Find the equation of the **vertical asymptote** and the equation of the **oblique asymptote**.

c) Hence, **sketch** the graph of $f(x)$.

3. Let $f(x) = x - 2$ and $g(x) = x^2 + 1$

a) What is the **range of function $g(x)$** ?

b) **Find an expression for $f \circ g(x)$** .

c) What is the **domain of $f \circ g(x)$** ?