

BA SANGAM COLLEGE
YEAR 13
MATHEMATICS
WORKSHEET 2

STRAND 3 – FUNCTIONS

1. The functions $f: x \rightarrow x^2 + 1$ and $g: x \rightarrow 4x - 2$

Find:

- a) $f - g(x)$
- b) domain of $f - g(x)$
- c) $f \circ g(x)$

2. The functions f and g are defined by $f(x) = x - 2$ and $g(x) = x^2 + 1$

Find

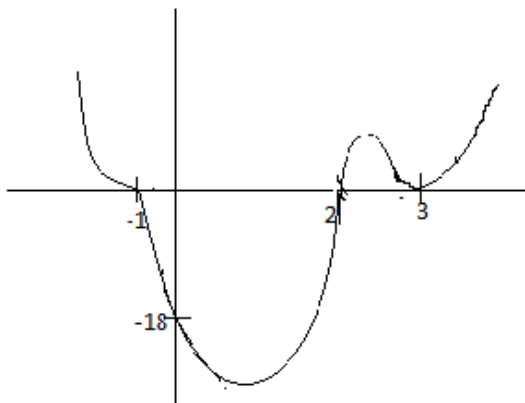
- a) $f \circ g(x)$
- b) $f + g(x)$

- c) the domain of $f \circ g(x)$
- d) the range of $f \circ g(x)$

3. Sketch the graph of $y = (x - 1)^2(x + 2)^3$

(Clearly show all the intercepts, turning points and the point of inflection)

4. Write the equation for the polynomial function shown in the graph below.



5. The graph of a rational function, $g(x)$, has the equation $g(x) = \frac{x^2 + 4x + 3}{x - 1}$.
- i. Find the x and y intercepts of $g(x)$.
 - ii. Find the equation of the vertical asymptote of $g(x)$.
 - iii. Find the equation of the oblique asymptote of $g(x)$.
 - iv. Sketch the graph of $g(x)$, showing the intercepts and the asymptotes.

6. A rational function is given by $g(x) = \frac{3-x}{(x+1)(x-2)}$
- Find the x and y intercepts of the graph of $g(x)$.
 - Identify the asymptotes and give their equations.
 - Sketch the graph of the function $g(x)$ clearly showing the intercepts and asymptotes.

7. The graph of a rational function, $g(x)$, has the equation

$$g(x) = \frac{(x+1)(x-3)}{(x+2)(x-2)}$$

- Find the x and y intercepts of the graph of $g(x)$.
- Find the equation(s) of the vertical asymptote(s) of the graph of $g(x)$.
- Find the equation of the horizontal asymptote of the graph of $g(x)$.
- Sketch the graph of $g(x)$, showing the intercepts and asymptotes.

8. A polynomial function is given as $y=f(x)$.

Given that the function satisfies $f(0)=f(2)=f(5)=0$ and $f(3)=24$,

- State the x and y intercepts of the function.
- Find the equation of the function.
- Sketch the graph of the function

