

Practice for Applications of Algebra and Calculus Assessment
Applications of Algebra and Calculus Assessment Standard 1.4

1. $f(x) = \frac{x^2 + 4x + 7}{x + 3}$, $x \neq -3$, $x \in \mathbf{R}$
 - a) Write down the equation of the vertical asymptote of the graph of $y = f(x)$ (1)
 - b) Show that the graph has a non-vertical asymptote and find its equation (2)
2. Given that $f(x) = \sin(2x)$, sketch a graph of $y = |2f(x)|$ for $0 \leq x \leq \pi$ (2)
3. Sketch a graph of $y = |f(x - 3)|$ given that $f(x) = x^3$. (2)
4. Show that there is a point of inflexion of the graph of $y = \frac{1}{25}x^5$ at $x = 0$. (3)
5. Find the stationary point on the curve $y = x^3 - 6x^2 + 12x - 5$ and prove it is a point of inflexion. (4)