Senior Test 2 Question 5

- $f(0) = 0$ $\boxed{\textbf{1 mark}}$

- Induction: $f(kx) = k^2 f(x)$. Must have both base cases. $\boxed{\textbf{2 marks}}$

- Thus $f(n) = n^2 f(1)$ $\boxed{\textbf{1 mark}}$

- $f\left(\frac{m}{n}\right) = \frac{m^2}{n^2} f(1)$ $\boxed{\textbf{1 mark}}$

- $f(-x) = f(x)$ $\boxed{\textbf{1 mark}}$

- $f(x) = kx^2$, and check. $\boxed{\textbf{1 mark}}$