

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

(a) Show that  $f(x)$  has a root between  $x = 2$  and  $x = 4$

(b) Approximate the value of the root accurate to within 0.1 of its exact value

2. Let  $g(x) = x^3 + x^2 - 6x$

(a) Factor  $g(x)$  to find its roots

(b) On which intervals is  $g(x)$  positive? On which intervals is  $g(x)$  negative?