Given function, $f(x) = x^3 + 2x^2 - x - 2$

(1) $x^3 + 2x^2 - x - 2 = 0$

$\Rightarrow x = x^3 + 2x^2 - 2$

$\Rightarrow g(x) = x^3 + 2x^2 - 2$

(2) $g(x) = x^3 + 2x^2 - 2$

Starting from $x_0 = 0$, we get,

$g(0) = -2$

$g(-2) = -2$

(3) error $= |-2 - (-2)| = |-2+2| = 0$

P.T.O

(4) $g(x) = x^3 + 2x^2 - 2$

$\Rightarrow g'(x) = 3x^2 + 4x$

$\Rightarrow g'(-2) = 3(-2)^2 + 4(-2)$

$= 4$

(5) $g(x) = \dfrac{2}{x^2 + 2x - 1}$

$\Rightarrow g'(x) = -\dfrac{4(x+1)}{(x^2 + 2x - 1)^2}$

$\Rightarrow g'(-1) = -\dfrac{4(-1+1)}{\{(-1)^2 + 2(-1) - 1\}^2}$

$= 0$

And hence, we got a super linear convergance