

(10)

$$2) a) g_1(x) = \frac{x^3 - x^2 + 7}{10} \quad [0, 1] \quad x_0 = 0.5$$

$$g'_1(x) = \frac{1}{10} (3x^2 - 2x) ; g'_1(0.5) = \frac{1}{10} (3(0.5)^2 - 2(0.5)) = -0.025$$

it converges really fast as it is close to zero and $-1 <$ and < 1

$$g_2(x) = \sqrt{x^3 - 10x + 7} \quad ; \quad g'_2(x) = \frac{3x^2 - 10}{2\sqrt{x^3 - 10x + 7}}$$

$$g'_2(0.5) = \frac{3(0.5)^2 - 10}{2\sqrt{(0.5)^3 - 10(0.5) + 7}} = -3.17272$$

doesn't converge, it is < -1

$$g_3(x) = \frac{7}{-x^2 + x + 10} \quad ; \quad g'_3(x) = \frac{-7(-2x + 1)}{(-x^2 + x + 10)^2}$$

$$g'_3(0.5) = \frac{-7(-2(0.5) + 1)}{(1 - (0.5)^2 + 0.5 + 10)^2} = 0$$

This has the fastest converging among all 3.