

Sec 4.7 page 315 (1, 4, 5, 8-11, 13)

① a) discuss

b) no why?

④ a) $x_1 = 0$ does not converge

b) $x_1 = 1$ tangent does not converge

c) $x_1 = 3 \rightarrow x_2 = 1$ same as b row

d) $x_1 = 4$ tangent does not converge

e) $x_1 = 5$ works

⑤ $x^3 + 2x - 4 = 0$ $x_1 = 1$

$$x_2 = 1 - \frac{1^3 + 2 - 4}{3(1)^2 + 2} = 1.2$$

$$x_3 = 1.2 - \frac{(1.2)^3 + 2(1.2) - 4}{3(1.2)^2 + 2} = \boxed{1.1797}$$

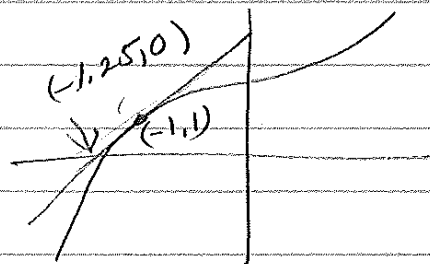
⑧ $x^5 + 2 = 0$ $x_1 = -1$

$$x_2 = -1 - \frac{(-1)^5 + 2}{5(-1)^4} = -1.2$$

$$x_3 = -1.2 - \frac{(-1.2)^5 + 2}{5(-1.2)^4} = \boxed{-1.1529}$$

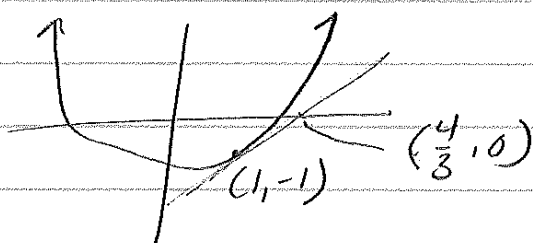
⑨ $x^3 + x + 3 = 0$ $x_1 = -1$

$$x_2 = -1 - \frac{(-1)^3 + (-1) + 3}{3(-1)^2 + 1} = -1.25$$



⑩ $x^4 - x - 1 = 0$ $x_1 = 1$

$$x_2 = 1 - \frac{(1)^4 - (1) - 1}{4(1)^3 - 1} = \frac{4}{3}$$



⑪ $\sqrt[5]{20} = x$ $x^5 - 20 = 0$ use $x_1 = 2$ since $\sqrt[5]{32} = 2$ and 32 is close to 20.

$$x_2 = 2 - \frac{(2)^5 - 20}{5(2)^4} = 1.85$$

$$x_3 = 1.82148614$$

$$x_4 = 1.82056514$$

$$x_5 = 1.82056420 \approx x_4$$

⑬ $x^4 = 1 + x \Rightarrow x^4 - x - 1 = 0$ $x_1 = -0.7$ and $x_1 = 1.2$

$$x_1 = -0.7$$

$$x_1 = 1.2$$

$$x_2 = -0.725253$$

$$x_2 = 1.221380$$

$$x_3 = -0.724493$$

$$x_3 = 1.220745$$

$$x_4 = -0.724492$$

$$x_4 = 1.220744$$

