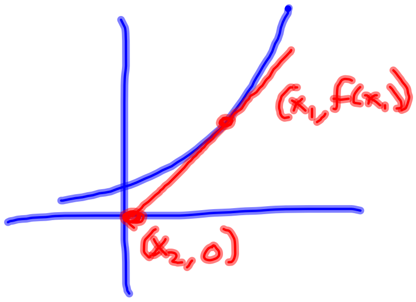
Let x_1 = my first guess.

x_2 = where the tangent to $f(x)$ at x_1 meets the x-axis.



$$y = f'(x_1)(x - x_1) + f(x_1)$$

x-intercept is $(x_2, 0)$

$$f'(x_1)(x - x_1) + f(x_1) = 0$$

$$f'(x_1)x - f'(x_1)x_1 + f(x_1) = 0$$

$$f'(x_1)x = f'(x_1)x_1 - f(x_1)$$

$$x = \frac{f'(x_1)x_1}{f'(x_1)} - \frac{f(x_1)}{f'(x_1)}$$

$$x = \boxed{x_1 - \frac{f(x_1)}{f'(x_1)} = x_2}$$

$$x_3 = x_2 - \frac{f(x_2)}{f'(x_2)}$$

$$\vdots$$

$$x_n = x_{n-1} - \frac{f(x_{n-1})}{f'(x_{n-1})}$$ is the recursion.

$$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$$

$$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$$

13. The root of $x^4 - 2x^3 + 5x^2 - 6 = 0$ in the interval $[1, 2]$

$$f'(x) = 4x^3 - 6x^2 + 10x$$

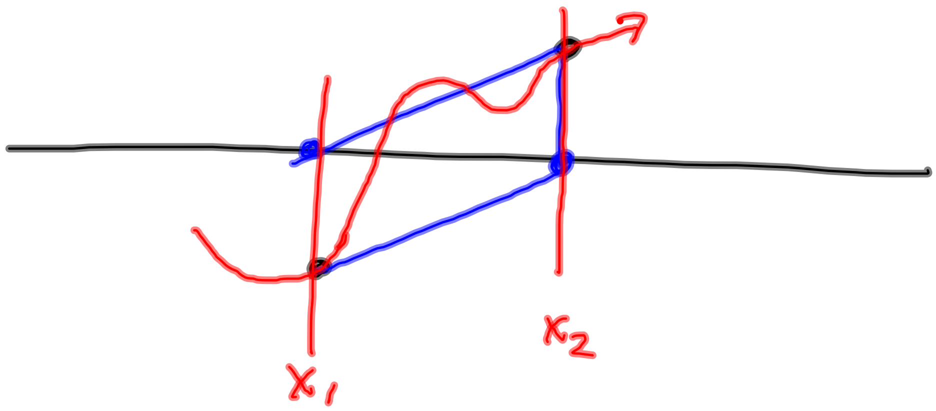
$$x_{n+1} = x_n - \frac{x_n^4 - 2x_n^3 + 5x_n^2 - 6}{4x_n^3 - 6x_n^2 + 10x_n}$$

3

$x_1 = 1$

$$x_2 = 1 - \frac{1^4 - 2(1)^3 + 5(1)^2 - 6}{4(1)^3 - 6(1)^2 + 10(1)} = 1.25$$

$$x_3 = 1.25 - \frac{(1.25)^4 - 2(1.25)^3 + 5(1.25) - 6}{4(1.25)^3 - 6(1.25)^2 + 10(1.25)}$$



$$y = \frac{x^2-4}{x^2-2x} = \frac{(x-2)(x+2)}{x(x-2)} = \frac{x+2}{x} \quad x \neq 2$$

Hole @ (2,2)

$$y' = \frac{x-(x+2)}{x^2} = \frac{-2}{x^2}$$

$$y'' = 4x^{-3} = \frac{4}{x^3}$$

10

$$\frac{x-2}{x-2} = 1$$

Horizontal $y=1$ w/ hole @ $x=2$.

$$\boxed{\frac{(x-2)^3}{x-2} = (x-2)^2,\ x \neq 2 \quad \text{Hole @ } (2,0)}$$

$$\frac{x-2}{(x-2)^3} = \frac{1}{(x-2)^2}$$

$x=2$ is VA