

Newton - Raphson Method

```
Rootsf(f, x) := | dx ← 1
                | tol ← 0.000001
                | while |dx| > tol
                |   | dfxo ←  $\frac{d}{dx}f(x)$ 
                |   | fxo ← f(x)
                |   | return "error" if |dfxo| < tol
                |   | dx ←  $\frac{-fxo}{dfxo}$ 
                |   | x ← x + dx
                | Root ← x
```

$$f(x) := x^3 - 5.051 \cdot x^2 + 1.2755$$

$$\text{Rootsf}(f, 1) = 0.53123$$

$$\text{Rootsf}(f, 0) = \text{"error"}$$

$$\text{Rootsf}(f, -5) = -0.48021$$

$$\text{Rootsf}(f, 100) = 4.99998$$

$$\frac{d}{dx}f(x) \rightarrow 3 \cdot x^2 - 10.102 \cdot x$$

$$x := 0$$

$$\frac{d}{dx}f(x) = -5.71159 \times 10^{-15}$$