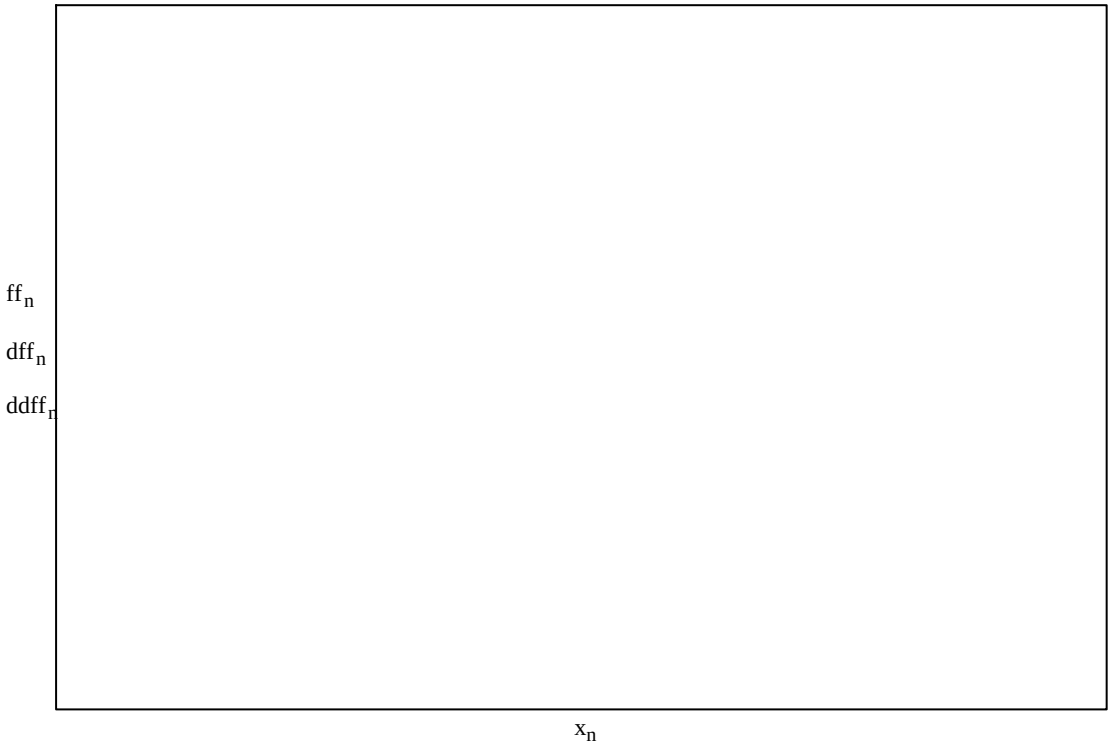
1A1

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

$N := 2001$ $\quad n := 0 .. N$ $\quad xa := -5$ $\quad xb := 5$ $\quad x_n := xa + \frac{xb - xa}{N} \cdot n$

$ff_n := f(x_n)$ $\quad ya := -5$ $\quad yb := 5$

$df(x) := \frac{d}{dx} f(x)$ $\quad dff_n := df(x_n)$ $\quad ddf(x) := \frac{d^2}{dx^2} f(x)$ $\quad ddff_n := ddf(x_n)$



$s1 := 1$ $\quad t1 := \text{Maximize}(f, s1)$ $\quad t1 = \blacksquare$ $\quad f(t1) = \blacksquare$

$s2 := 6.1$ $\quad t2 := \text{Minimize}(f, s2)$ $\quad t2 = \blacksquare$ $\quad f(t2) = \blacksquare$

Given $\quad df(x) = 0$ $\quad \text{Find}(x) \rightarrow \; = \blacksquare$

Given $\quad ddf(x) = 0$ $\quad \text{Find}(x) \rightarrow \; = \blacksquare$

1A2

$$f(x) := x^3 \cdot (14 - x)^4$$

$N := 2001$ $\quad n := 0 .. N$ $\quad xa := -20$ $\quad xb := 20$ $\quad x_n := xa + \frac{xb - xa}{N} \cdot n$

$ff_n := f(x_n)$ $\quad ya := -2000000$ $\quad yb := 2000000$

$df(x) := \frac{d}{dx} f(x)$ $\quad dff_n := df(x_n)$ $\quad ddf(x) := \frac{d^2}{dx^2} f(x)$ $\quad ddff_n := ddf(x_n)$

$s1 := 1$ $\quad t1 := \text{Maximize}(f, s1)$ $\quad t1 = \blacksquare$ $\quad f(t1) = \blacksquare$

$s2 := 6.1$ $\quad t2 := \text{Minimize}(f, s2)$ $\quad t2 = \blacksquare$ $\quad f(t2) = \blacksquare$

Given $\quad df(x) = 0$ $\quad \text{Find}(x) \rightarrow \; = \blacksquare$

Given $\quad ddf(x) = 0$ $\quad \text{Find}(x) \rightarrow \; = \blacksquare$

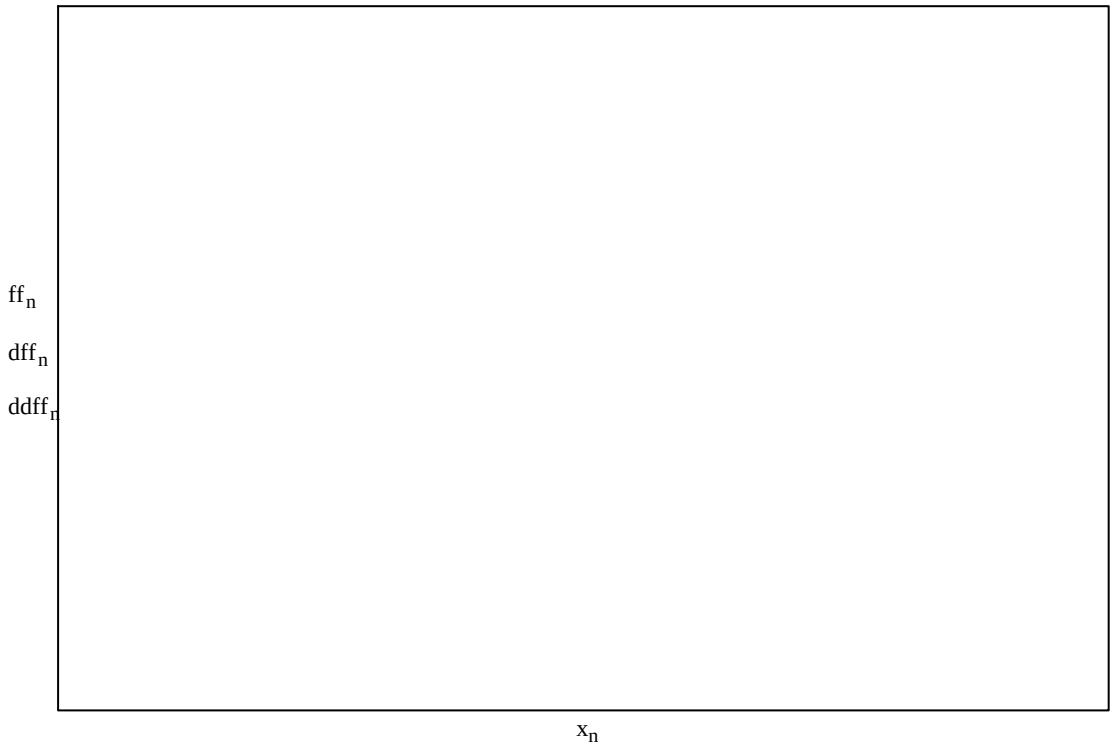
1A3

$$f(x) := x^3 \cdot (6 - x)^3$$

$N := 2001$ $\quad n := 0 .. N$ $\quad xa := -20$ $\quad xb := 20$ $\quad x_n := xa + \frac{xb - xa}{N} \cdot n$

$ff_n := f(x_n)$ $\quad ya := -1000$ $\quad yb := 1000$

$df(x) := \frac{d}{dx} f(x)$ $\quad dff_n := df(x_n)$ $\quad ddf(x) := \frac{d^2}{dx^2} f(x)$ $\quad ddff_n := ddf(x_n)$



$s1 := 1$ $\quad t1 := \text{Maximize}(f, s1)$ $\quad t1 = \blacksquare$ $\quad f(t1) = \blacksquare$

$s2 := 6.1$ $\quad t2 := \text{Minimize}(f, s2)$ $\quad t2 = \blacksquare$ $\quad f(t2) = \blacksquare$

Given $\quad df(x) = 0$ $\quad \text{Find}(x) \rightarrow \; = \blacksquare$

Given $\quad ddf(x) = 0$ $\quad \text{Find}(x) \rightarrow \; = \blacksquare$

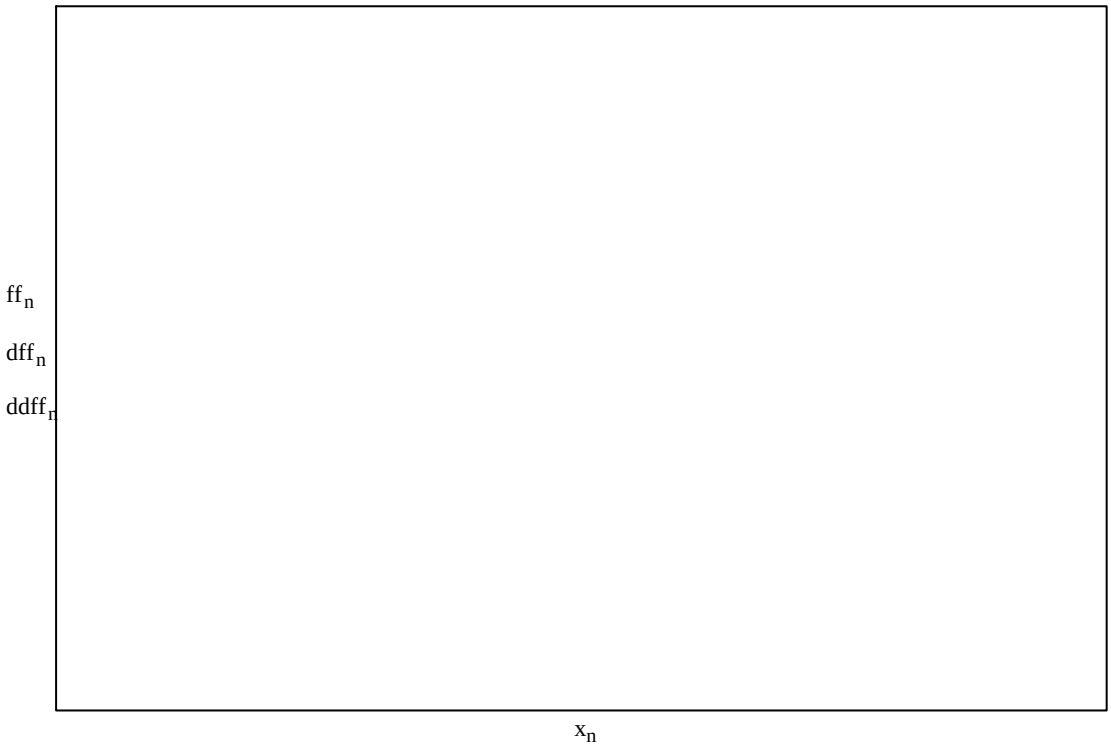
1A4

$$f(x) := x^4 \cdot (12 - x)^4$$

$N := 2001$ $\quad n := 0 .. N$ $\quad xa := -20$ $\quad xb := 20$ $\quad x_n := xa + \frac{xb - xa}{N} \cdot n$

$ff_n := f(x_n)$ $\quad ya := -2000000$ $\quad yb := 2000000$

$df(x) := \frac{d}{dx} f(x)$ $\quad dff_n := df(x_n)$ $\quad ddf(x) := \frac{d^2}{dx^2} f(x)$ $\quad ddff_n := ddf(x_n)$



$s1 := 1$ $\quad t1 := \text{Maximize}(f, s1)$ $\quad t1 = \blacksquare$ $\quad f(t1) = \blacksquare$

$s2 := 6.1$ $\quad t2 := \text{Minimize}(f, s2)$ $\quad t2 = \blacksquare$ $\quad f(t2) = \blacksquare$

Given $\quad df(x) = 0$ $\quad \text{Find}(x) \rightarrow \; = \blacksquare$

Given $\quad ddf(x) = 0$ $\quad \text{Find}(x) \rightarrow \; = \blacksquare$