Given Function: y = $\sqrt{2\cdot x-4}$ Given Point (6,0)

Objective Function: (not expanded) D(x) = $\sqrt{(x-6)^2+(\sqrt{2\cdot x-4}-0)^2}$

There are no roots of Objective Function

Objective Function: (expanded) D(x) = $\sqrt{x^2-10\cdot x+32}$

Derivative of Objective Function D'(x) = $\dfrac{x-5}{\sqrt{x^2-10\cdot x+32}}$

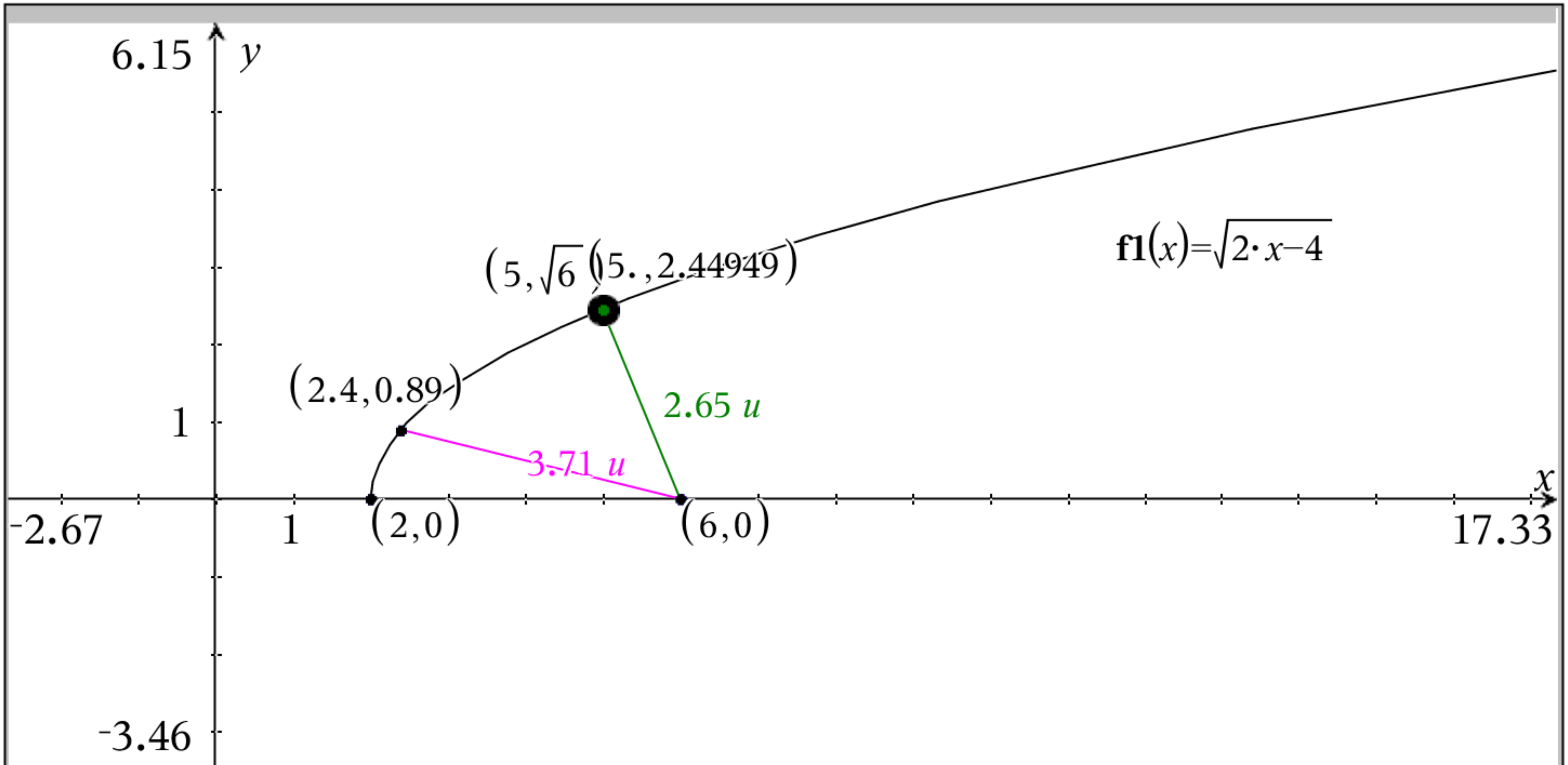
Roots of Derivative Function x = 5

Closest Point on the Given function to the fixed point at (6,0)

is at x = 5 and y = $\sqrt{2\cdot 5-4} = \sqrt{6} \approx 2.45$ or (2 , $\sqrt{6}$)

The minimum distance from the fixed point (6,0) to the given function is

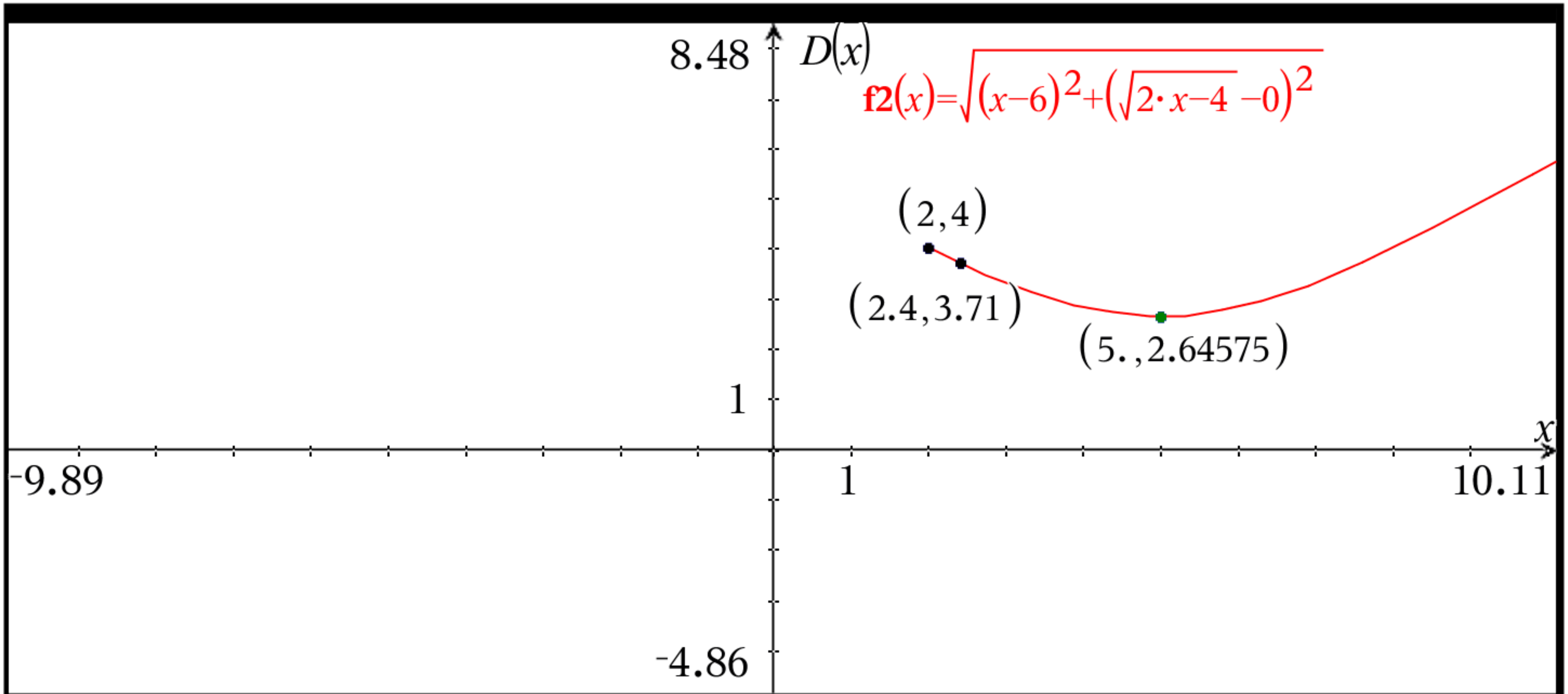
D(5) = $\sqrt{7} \approx 2.65$



any_x =2.4

The graph on the graph above is the given function

y $=\sqrt{2\cdot(x-2)}$



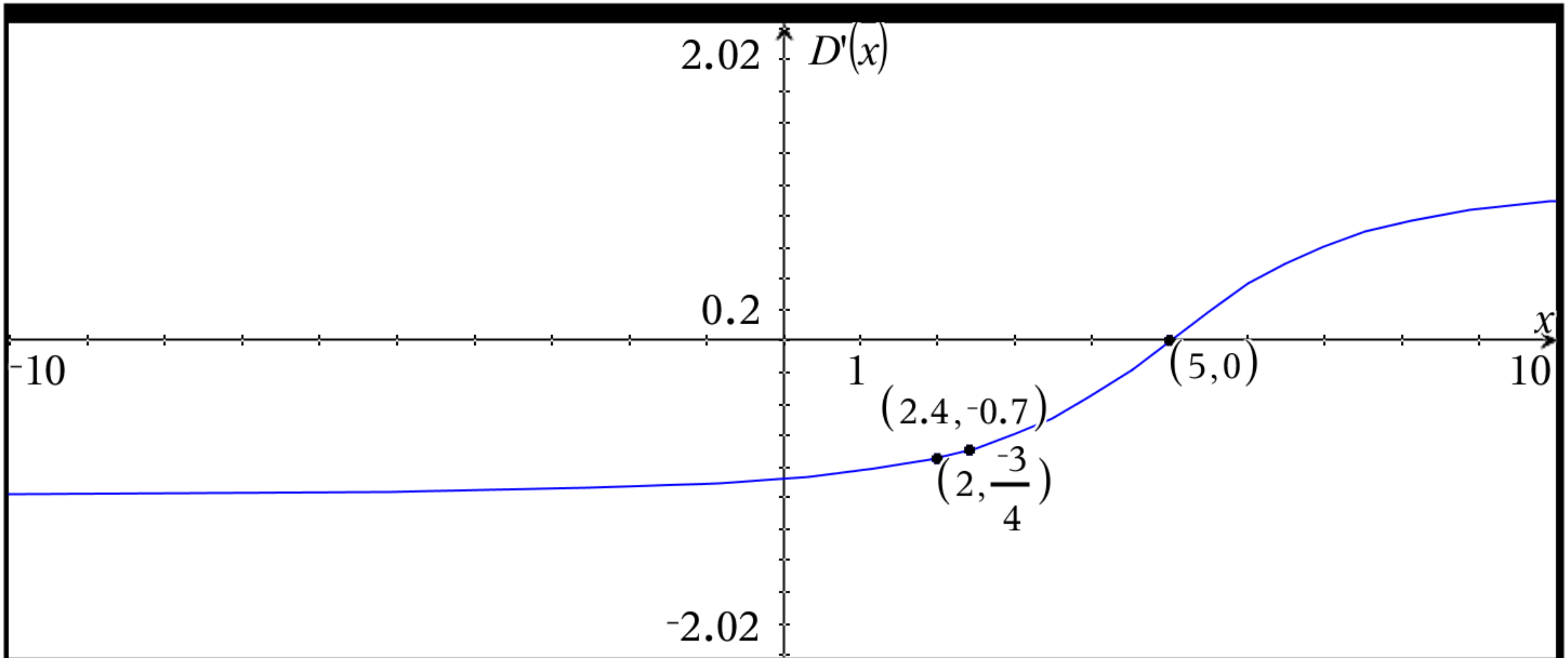
$f4(x)=$

any_x =2.4

The graph above is the distance function the measures distance from fixed point (6,0) to the given function y $=\sqrt{2\cdot(x-2)}$

The graph of the above is the distance function

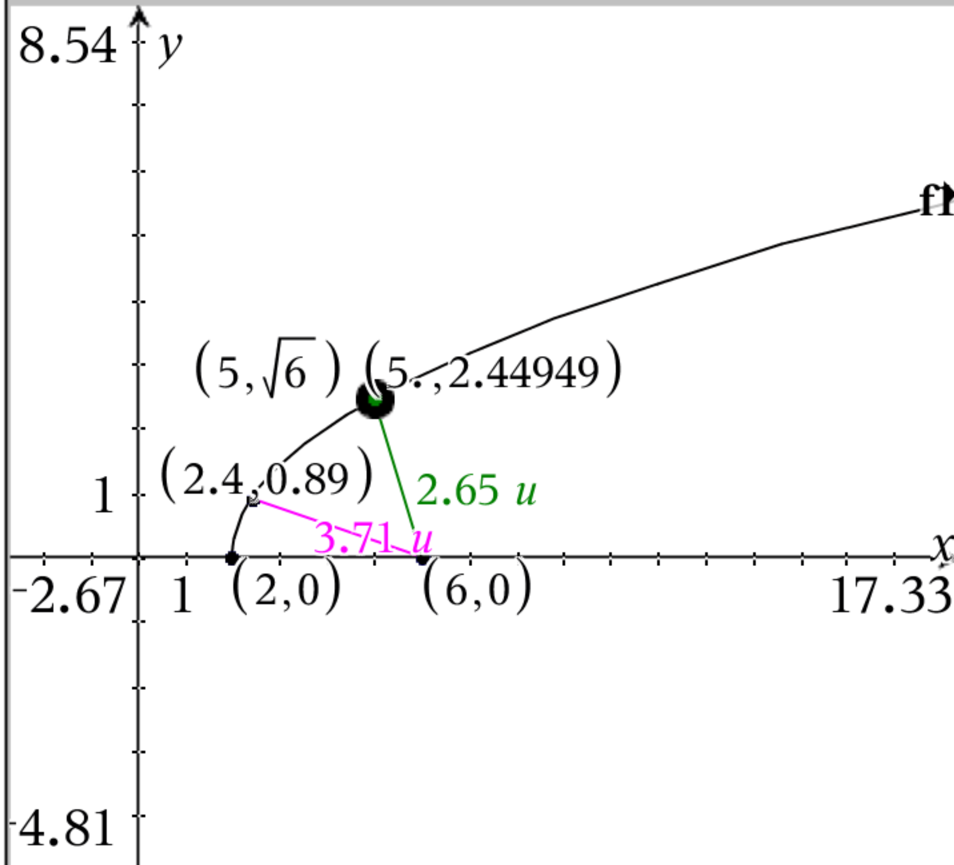
D(x) = $\sqrt{x^2-10\cdot x+32}$

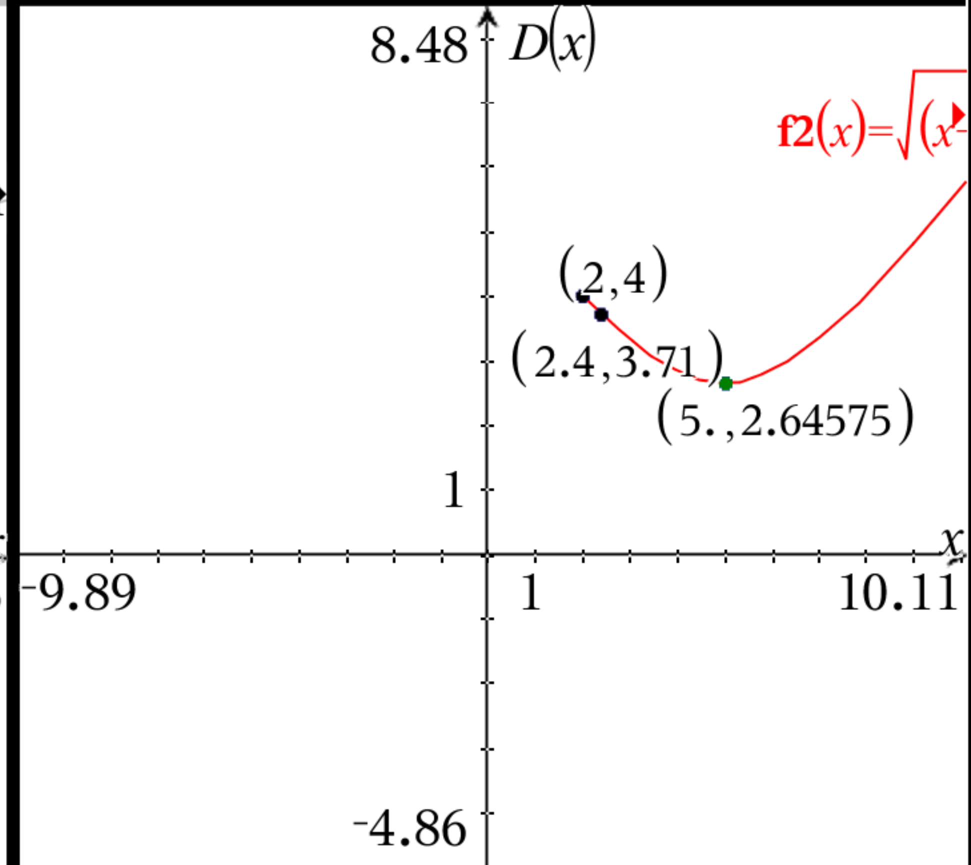


any_x =2.4

The graph of the above is the derivative of the distance function

$$D'(x) = \frac{x-5}{\sqrt{x^2-10\cdot x+32}}$$



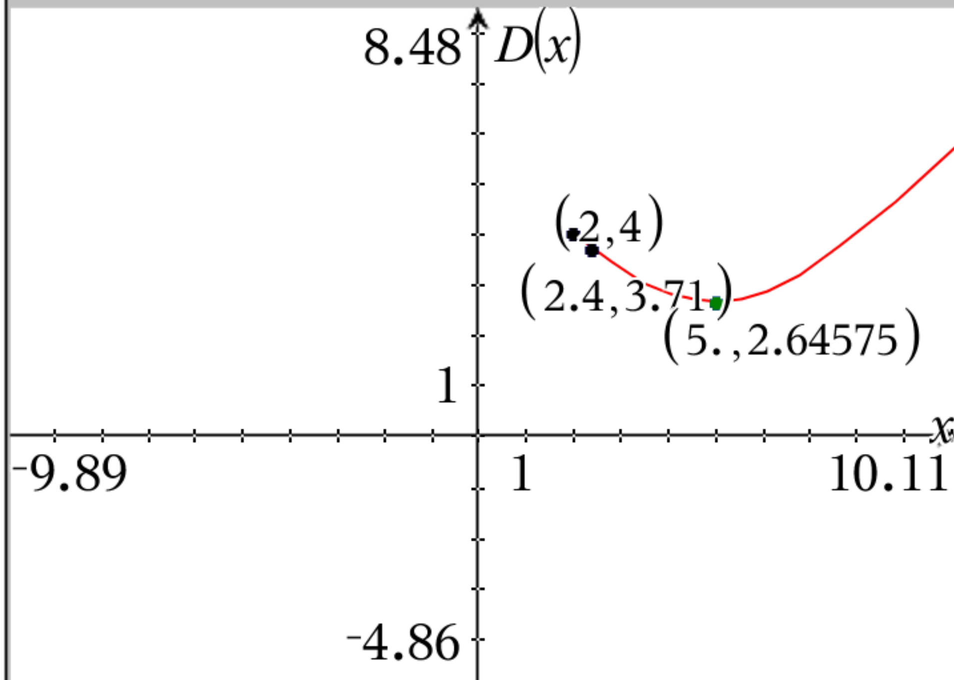


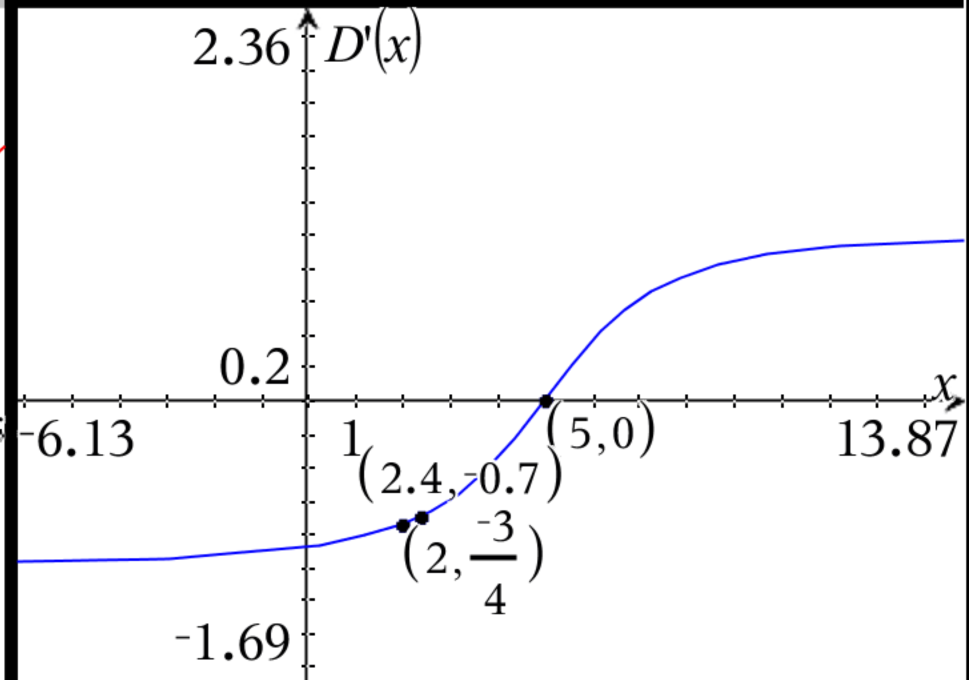
any_x =2.4

The graph on the left is the given function

y = **f1**(x)

The graph of the right is the distance function D(x) = **f2**(x)





any_x =2.4

The graph on the left is the distance function y = $\sqrt{x^2-10\cdot x+32}$

The graph of the right is the derivative of the distance function

D' (x) = $\dfrac{x-5}{\sqrt{x^2-10\cdot x+32}}$