Given Function: y = $\sqrt{8\cdot x-32}$ Given Point (11,0)

Objective Function: (not expanded) D(x) = $\sqrt{(x-11)^2+(\sqrt{8\cdot x-32}-0)^2}$

There are no roots of Objective Function

Objective Function: (expanded) D(x) = $\sqrt{x^2-14\cdot x+89}$

Derivative of Objective Function D'(x) = $\dfrac{x-7}{\sqrt{x^2-14\cdot x+89}}$

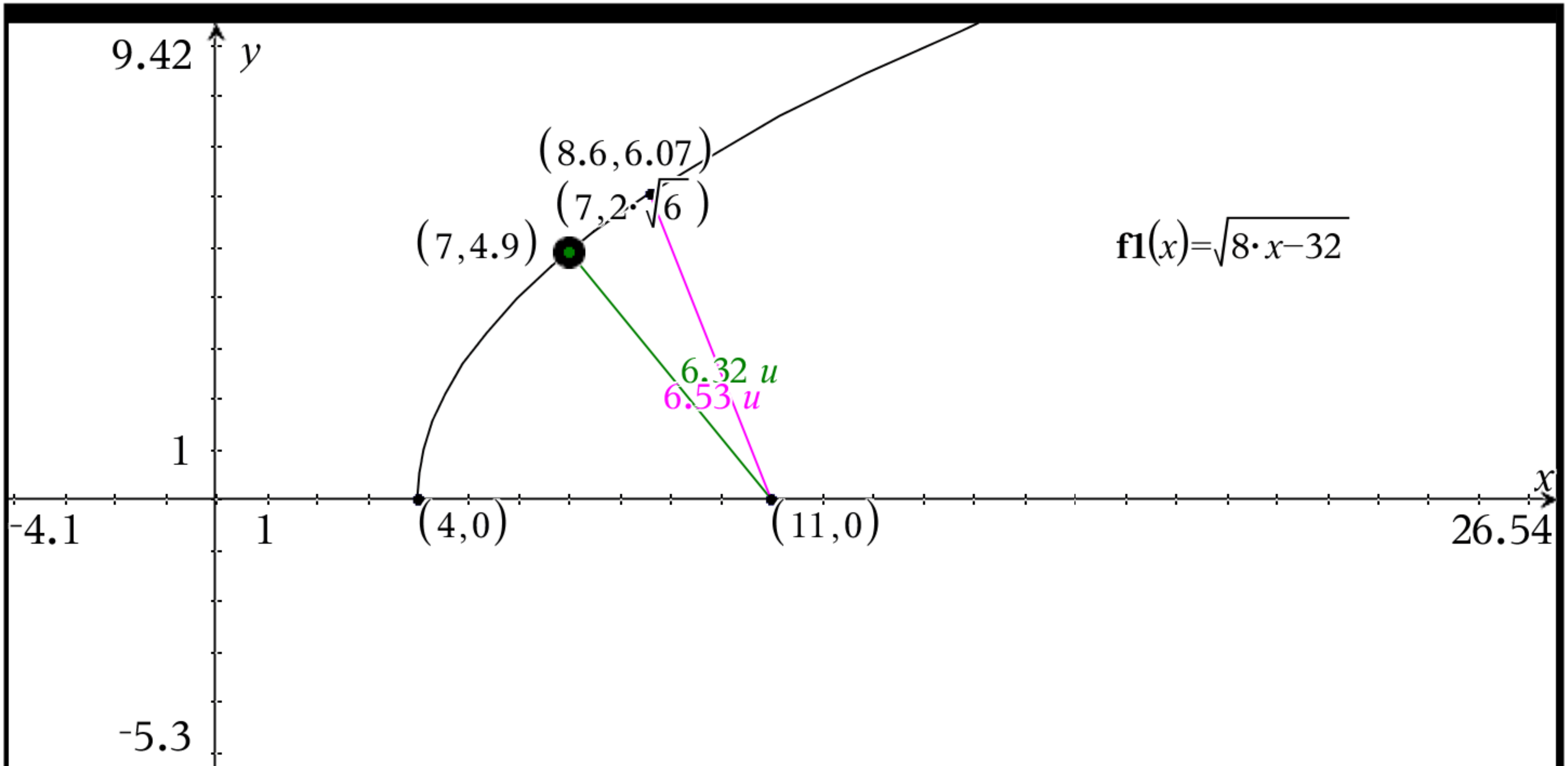
Roots of Derivative Function x = 7

Closest Point on the Given function to the fixed point at (11,0)

is at x = 7 and y = $\sqrt{8\cdot 7-32} = 2\cdot \sqrt{6} \approx 4.9$ or (7, $\sqrt{24}$)

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

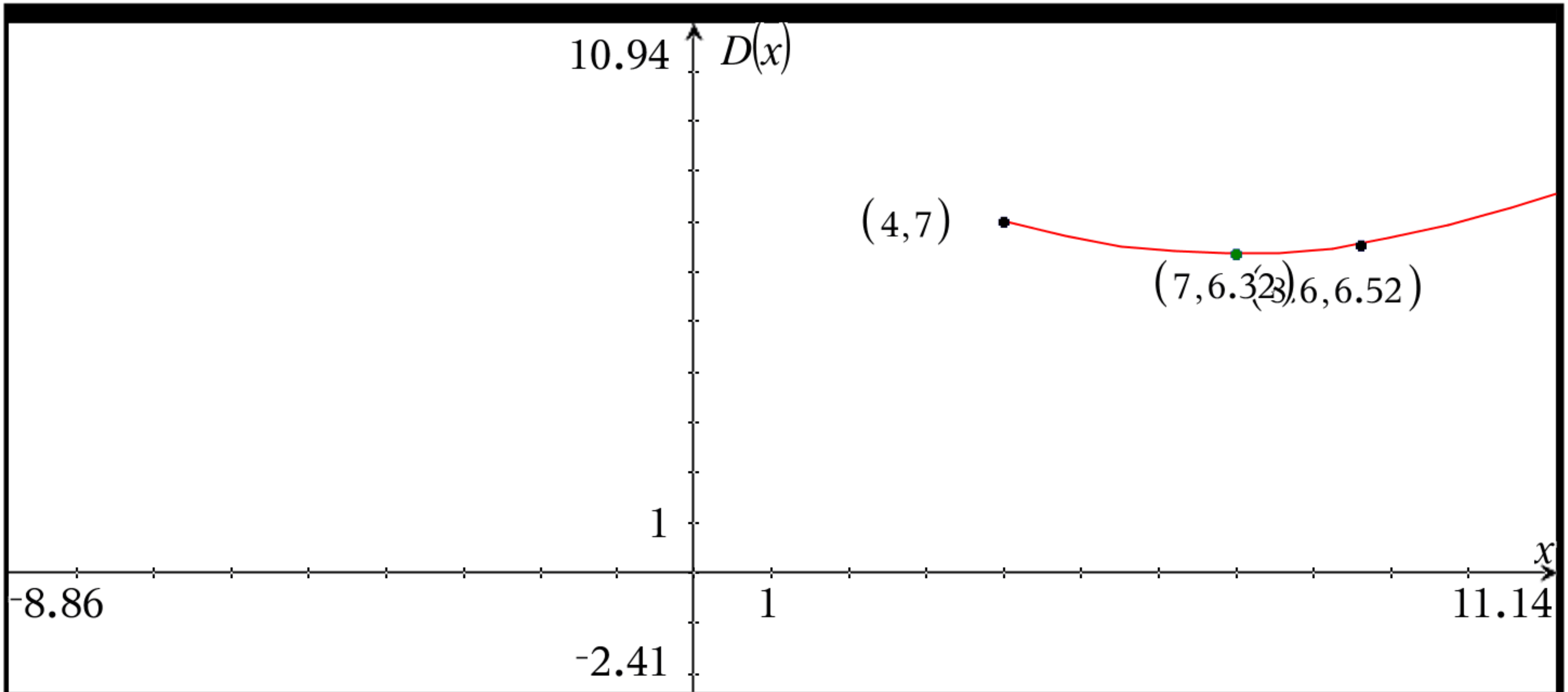
D(7) = $2\cdot \sqrt{10} \approx 6.32$



any_x =8.6

The graph on the graph above is the given function

y $=2\cdot\sqrt{2\cdot(x-4)}$

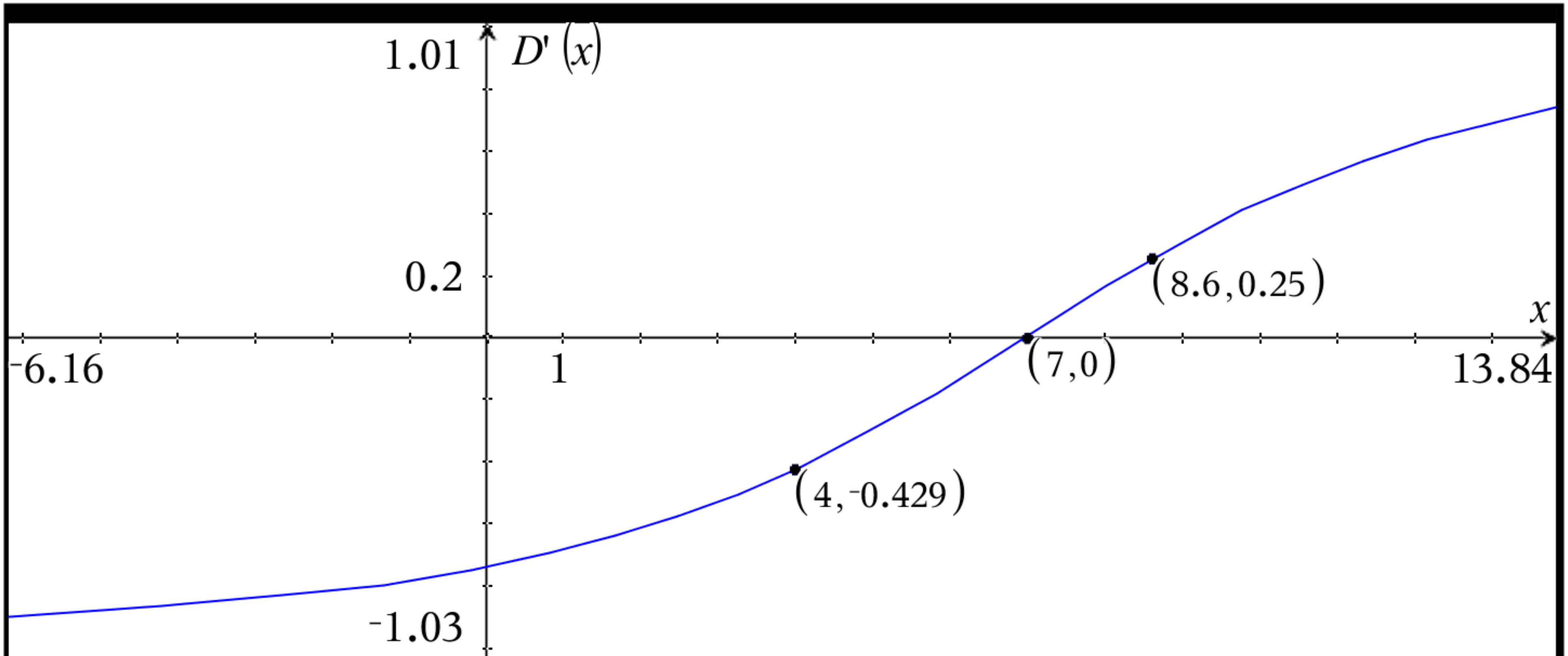


any_x =8.6

The graph above is the distance function the measures distance from fixed point (6,0) to the given function y $=2\cdot\sqrt{2\cdot(x-4)}$

The graph of the above is the distance function

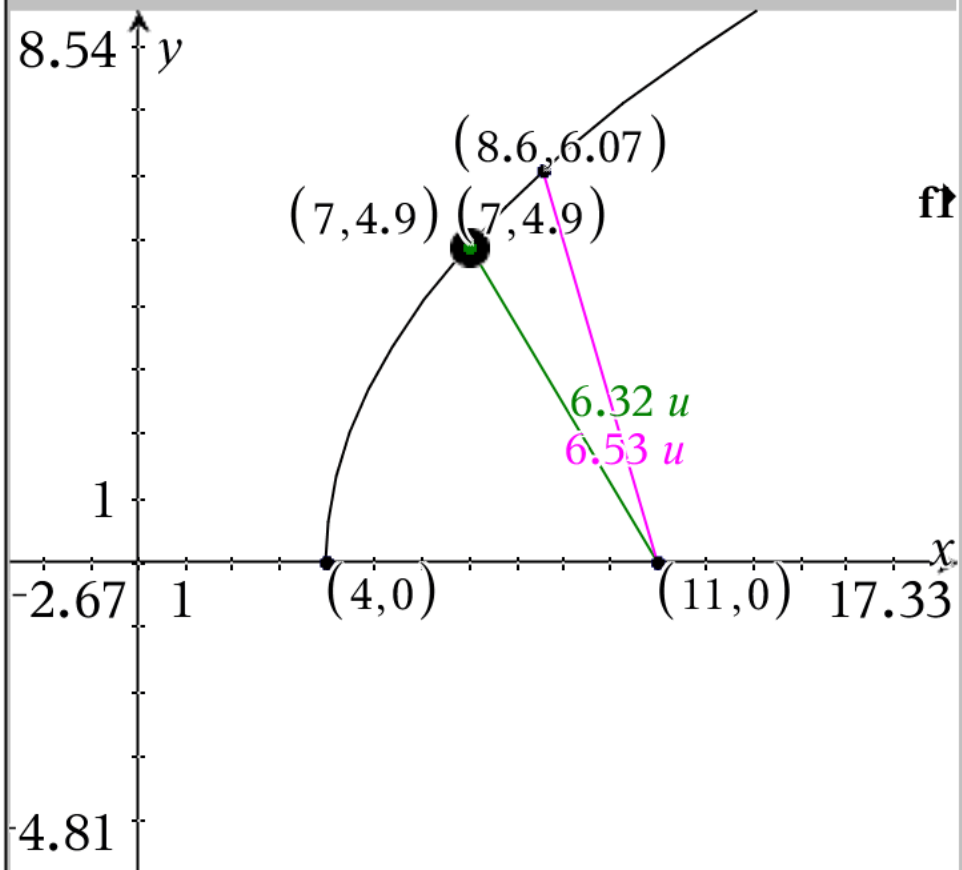
D(x) $=\sqrt{x^2-14\cdot x+89}$

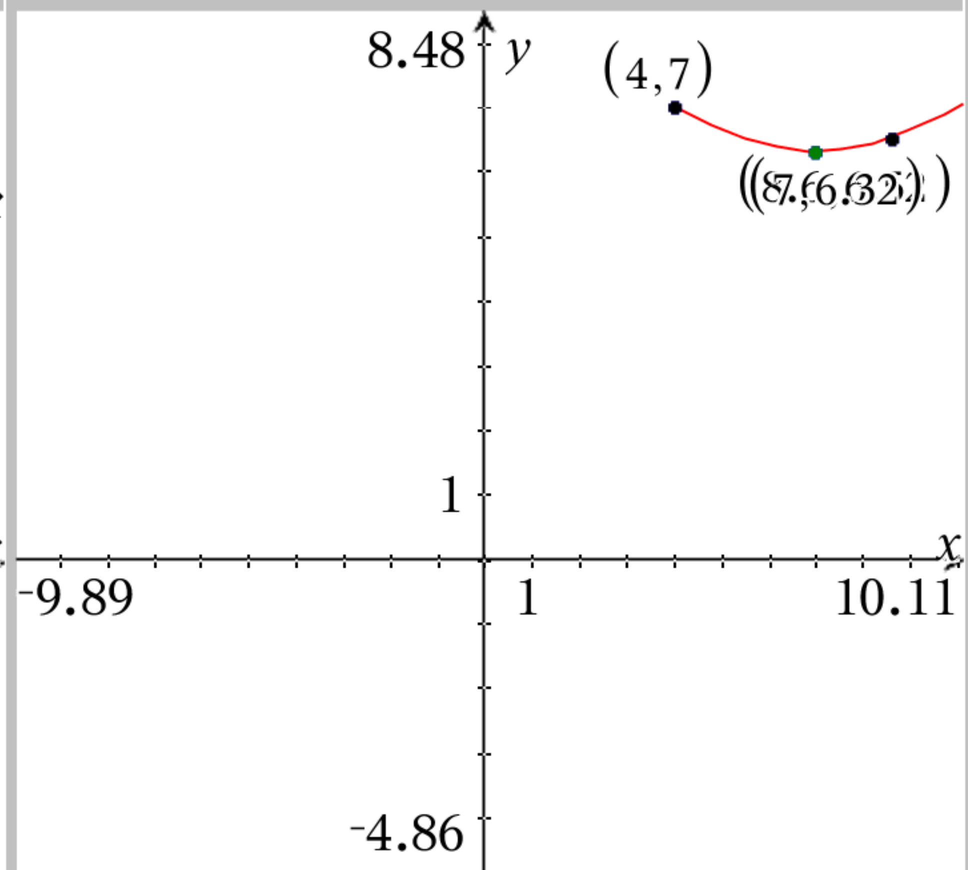


any_x =8.6

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

$$D'(x) = \frac{x-7}{\sqrt{x^2-14\cdot x+89}}$$





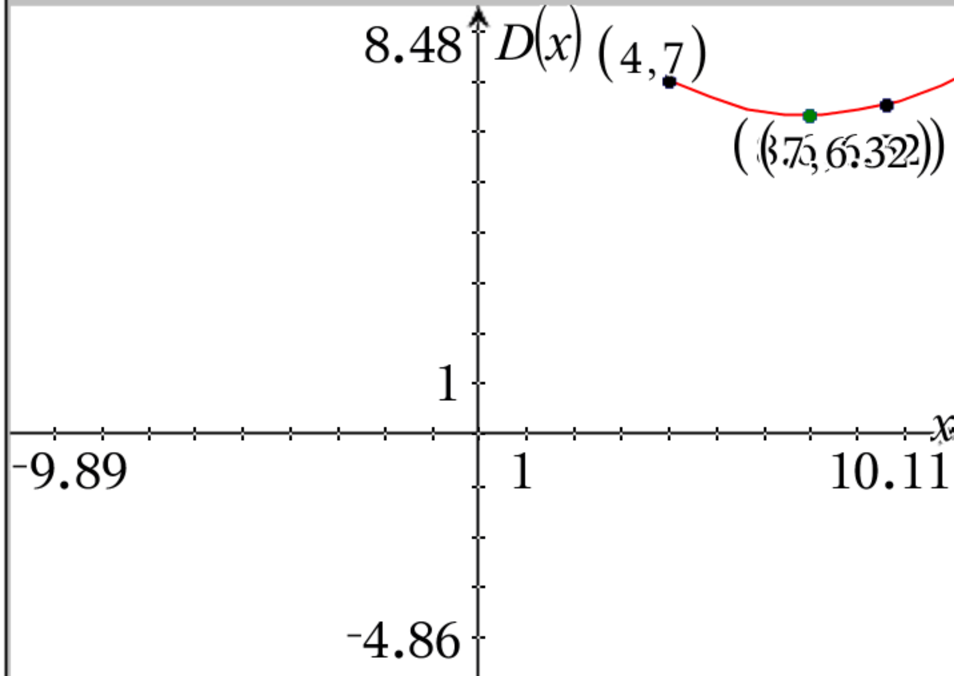
any_x =8.6

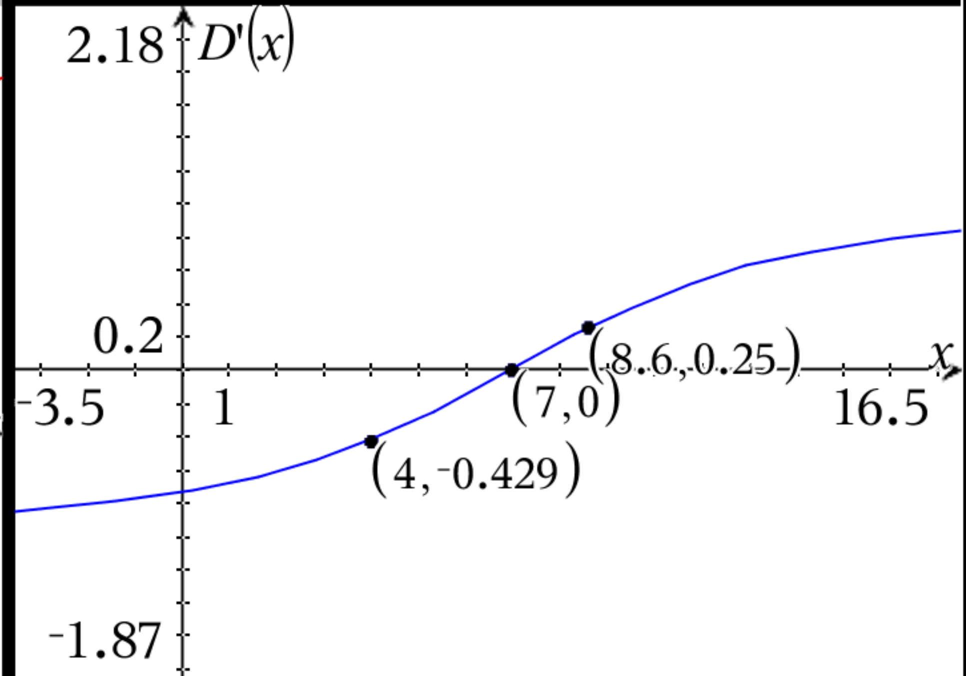
The graph on the left is the given function

y $=2\cdot \sqrt{2\cdot (x-4)}$

The graph of the right is the distance

function D(x) = $\sqrt{x^2-14\cdot x+89}$





< > any_x =8.6

The graph on the left is the distance function y = $\sqrt{x^2-14\cdot x+89}$

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

D' (x) = $\frac{x-7}{\sqrt{x^2-14\cdot x+89}}$