
§ 3.6 (Cont'd)

(1 and 2) \( P = (x, y) \) is on \( y = \sqrt{x} \)

a) What is the distance from \( P \) to \( (1.75, 0) \)?

\[
d = \sqrt{(x-1.75)^2 + (y-0)^2}
\]

\[
d = \sqrt{(x-1.75)^2 + (\sqrt{x}-0)^2}
\]

\[
d = \sqrt{(x-1.75)(x-1.75) + y^2}
\]

b)  Variable 1 = \( d \)  Variable 2 = \( x \)

\[
d = \sqrt{x^2 - 2.5x + 3.0625}
\]

\[
y = \sqrt{x^2 - 2.5x + 3.0625}
\]

\[
x \quad \rightarrow \quad d
\]

\[
\text{Accept the input, Calculate } \quad \sqrt{x^2 - 2.5x + 3.0625}
\]

\[
\text{Deliver the output}
\]

\[
d(0) = 1.75
\]

\[
d(0) = \sqrt{0^2 - 2.5(0) + 3.0625}
\]

\[
d(0) = 1.75
\]
Oct 3rd, 2016

§ 3 6 (Cont'd)

1 and 2) \( P = (x, y) \) is on \( y = \sqrt{x^3} \)

a) What is the distance from \( P \) to \((1.75, 0)\)?

\[
d = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2}
\]

\[
d = \sqrt{(1.75 - 0)^2 + (x - 1.75)^2}
\]

\[
d = \sqrt{(x - 1.75)^2 + y^2}
\]

b) \text{Variable 1: } d \quad \text{Variable 2: } X

\[
d = \sqrt{x^2 - 1.75x - 1.75x + 3.0625 + 1x^2}
\]

\[
d = \sqrt{x^2 - 2.5X + 3.0625}
\]

\[
d(X) = \sqrt{x^2 - 2.5X + 3.0625}
\]

\[
X \quad \text{d} \quad \text{Accept the input } X \quad \text{Calculate } \sqrt{x^2 - 2.5X + 3.0625} \quad \text{Deliver the output}
\]

Distance from \( P \) to \((1.75, 0)\):

\[
d = \sqrt{0^2 - 2.5(0) + 3.0625}
\]

\[
d(0) = 1.75
\]
What is $d$ if $x=1$?

\[ d(i) = \sqrt{1^2 - 2 \cdot 3(i) + 3.0625} \]

\[ d(i) = 1.25 \]

\( d \) → local minimum.
The $x$-axis represents the $x$ coordinate.

\( (1.25, 1.22) \)

Type 2.
Area determined by a point of a function

3 and 4:

\[ x \rightarrow \text{point} \rightarrow A \rightarrow \text{Area of the rectangle created by point $P$ and the origin} \]

Express $A$ as a function of $x$.

a) \[ A = xy \]

\[ y = 9 - x^2 \]

\[ A = x(9 - x^2) \]

\[ A(x) = x(9 - x^2) \]

b) Domain of $A = (-\infty, \infty)$

But the instructions provide a limitation.
The $x$-coord and $y$-coord of $I$ must be positive, so the domain is: \( [0, 3] \)
Window \( x_{\text{min}} = 0 \)
\( y_{\text{max}} = 3 \).

a) Create the graph

d) Maximum: \( (1.73, 10.39) \)

\[ x\text{-coord} \quad \text{the area of the rectangle} \]
\( pt \ P \) is \( 1.73 \) \( \text{(biggest area)} \)