$y_1 = x^2$

$y_2 = 2^x$

variazione della x

$x = avanzamento$

$accumulatore = 100000000$ $passo = \frac{1}{10}$

$contatore = floor(\log_{10}[accumulatore])$

$avanzamento = contatore\ passo$

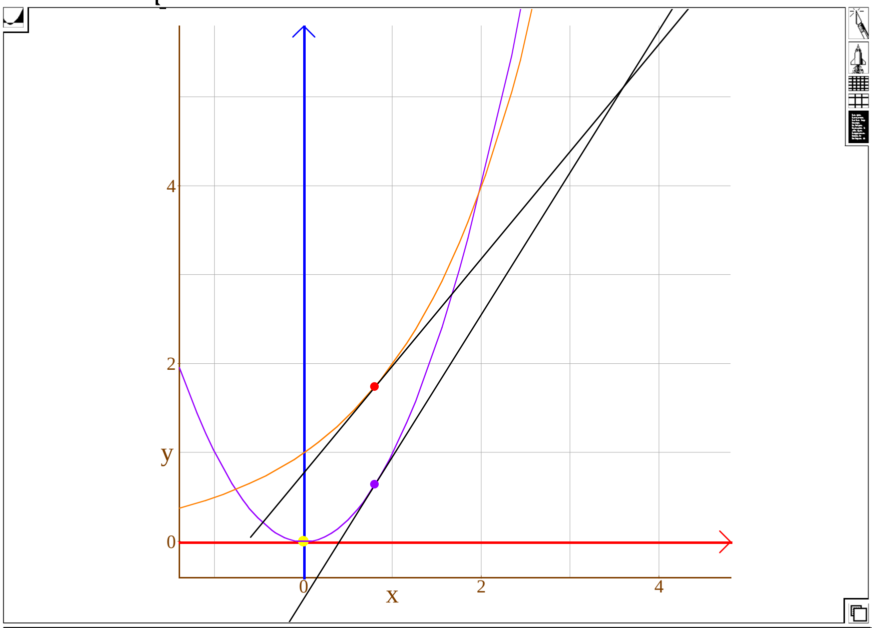
$avanzamento = 0.8$ Calculate

## controlli della figura

$dimensionepunti = 5$

$visualizzapunti = 1$

$$vs = \begin{cases} 1 & (visualizzapunti = 1) \\ ? & (visualizzapunti \neq 1) \end{cases}$$




$-1.4 \ldots 4.8$ = left...right True Proportions

$-0.4 \ldots 5.8$ = bottom...top cropping Moderately

Declarations

assi cartesiani e origine

funzioni

Line at $(x, y_1)$ where $x = left \ldots right$ with a normal line, colored Purple.

Line at $(x, y_2)$ where $x = left \ldots right$ with a normal line, colored Orange.

tangenti

Line at $\left(t, \left[\frac{\partial}{\partial x} y_1\right] t\right) + (x, y_1)$ where $t = left \ldots right$ with a normal line, colored Black.

Line at $\left(t, \left[\frac{\partial}{\partial x} y_2\right] t\right) + (x, y_2)$ where $t = left \ldots right$ with a normal line, colored Black.

Scatter plot of $(x, y_2)$ vs where ? using dimensionepunti point spots colored Red.

Scatter plot of $(x, y_1)$ vs where ? using dimensionepunti point spots colored Purple.

## definizione di logaritmo

Upon Transform transform $\log_{y}(z) = x$ into $y^{x} = z$.

Upon Transform transform $y^{x} = z$ into $\log_{y}(z) = x$.

Upon $\boxed{\text{Transform}}$ transform $z = y^{x}$ into $\log_{y}(z) = x$.

## regola del logaritmo del prodotto

- $\log_{b}(c\,f)$
- $\log_{b}(c) = x$
  - $b^{x} = c$ Transform
- $\log_{b}(f) = y$
  - $b^{y} = f$ Transform
- $c\,f$
  - $c\,f = b^{x} f$ Substitute
    - $c\,f = b^{x} b^{y}$ Substitute
      - $c\,f = b^{x+y}$ Simplify
        - $\log_{b}(c\,f) = x + y$ Transform
          - $\log_{b}(c\,f) = \log_{b}(c) + y$ Substitute
            - $\log_{b}(c\,f) = \log_{b}(c) + \log_{b}(f)$ Substitute

## regola del logaritmo dell'inverso

- $\log_{b}\left(\frac{1}{c}\right) = x$
  - $b^{x} = \frac{1}{c}$ Transform
    - $b^{x} = \frac{1}{b^{y}}$ Substitute
- $\log_{b}(c) = y$
  - $b^{y} = c$ Transform
- $b^{-y}$
  - $b^{-y} = \frac{1}{b^{y}}$ Transform
    - $b^{-y} = b^{x}$ Substitute
      - $\log_{b}(b^{x}) = -y$ Transform
        - $\log_{b}(b^{-y}) = -y$ Substitute
      - $\log_{b}(b^{-y}) = x$ Transform
        - $-y = x$ Substitute
          - $-y = \log_{b}\left(\frac{1}{c}\right)$ Substitute
            - $-\log_{b}(c) = \log_{b}\left(\frac{1}{c}\right)$ Substitute

## regola del logaritmo del quoziente

- $\log_{a}\left(b\frac{1}{c}\right)$
  - $\log_{a}\left(b\frac{1}{c}\right) = \log_{a}(b) + \log_{a}\left(\frac{1}{c}\right)$ Expand
    - $\log_{a}\left(b\frac{1}{c}\right) = \log_{a}(b) - \log_{a}(c)$ Transform
      - $\log_{a}\left(\frac{b}{c}\right) = \log_{a}(b) - \log_{a}(c)$ Simplify

## regola del logaritmo della potenza

- $\log_{b}(a^{c}) = x$
  - $b^{x} = a^{c}$ Transform
- $\log_{b}(a) = y$
  - $b^{y} = a$ Transform
    - $(b^{y})^{c} = a^{c}$ Apply
      - $(b^{y})^{c} = b^{x}$ Substitute
        - $b^{c\,y} = b^{x}$ Simplify
          - $\log_{b}(b^{x}) = c\,y$ Transform

- $\log_b\left(b^{c\,y}\right) = x$ Transform
  - $\log_b\left(b^{x}\right) = x$ Substitute
    - $c\,y = x$ Substitute
      - $c\,y = \log_b\left(a^{c}\right)$ Substitute
        - $c\log_b(a) = \log_b\left(a^{c}\right)$ Substitute

## regola della cocatenazione dei logaritmi

- $\log_b(a)\log_a(c)$
- $\log_b(a) = x$
  - $b^{x} = a$ Transform
- $\log_a(c) = y$
  - $a^{y} = c$ Transform
    - $\left(b^{x}\right)^{y} = c$ Substitute
      - $b^{x\,y} = c$ Simplify
        - $\log_b(c) = x\,y$ Transform
          - $\log_b(c) = \log_b(a)y$ Substitute
            - $\log_b(c) = \log_b(a)\log_a(c)$ Substitute
              - $b = c$
                - $\log_b(c) = \log_b(a)\log_a(b)$ Substitute
                  - $\log_b(b) = \log_b(a)\log_a(b)$ Substitute
                    - $1 = \log_b(a)\log_a(b)$ Substitute
                      - $1^{-1}\left(1\left[\log_a\{b\}\right]^{-1}\right) = \log_b(a)$ Move Over
                        - $\dfrac{1}{\left(\log_a[b]\right)^{1}} = \log_b(a)$ Simplify
                          - $\dfrac{1}{\log_a(b)} = \log_b(a)$ Simplify
          - $b^{1}$
            - $b^{1} = b$ Simplify
              - $\log_b(b) = 1$ Transform