328 $V(1;1)$, $F\left(\frac{3}{2};1\right)$.

$\left[x = \frac{1}{2}y^2 - y + \frac{3}{2}\right]$

Si vede che V e F hanno la stessa ordinata, quindi l'asse è $y = 1$ (orizzontale)

$\Downarrow$

$$x = ay^2 + by + c$$

$V(1,1) \rightarrow \begin{cases} -\dfrac{b}{2a} = 1 \\ -\dfrac{\Delta}{4a} = 1 \\ \dfrac{1-\Delta}{4a} = \dfrac{3}{2} \end{cases}$

$F\left(\frac{3}{2}, 1\right)$

$$\begin{cases} b = -2a \\ \Delta = -4a \\ 2 - 2\Delta = 12a \Rightarrow 1 - \Delta = 6a \end{cases} \qquad \begin{cases} // \\ // \\ 1 + 4a = 6a \end{cases}$$

$$\begin{cases} b = -1 \\ \Delta = -2 \\ a = \dfrac{1}{2} \end{cases}$$

$\Delta = b^2 - 4ac$

$4ac = b^2 - \Delta \qquad c = \dfrac{b^2 - \Delta}{4a} =$

$= \dfrac{1+2}{2} = \dfrac{3}{2}$

$$\boxed{x = \frac{1}{2}y^2 - y + \frac{3}{2}}$$

336 $V\left(\frac{1}{2}; \frac{1}{4}\right)$, $d: y = \frac{1}{6}$. $[y = 3x^2 - 3x + 1]$

$$V\left(-\frac{b}{2a}, -\frac{\Delta}{4a}\right)$$

$$y = ax^2 + bx + c \qquad y = -\frac{1+\Delta}{4a}$$

$$\begin{cases} -\dfrac{b}{2a} = \dfrac{1}{2} \\ -\dfrac{\Delta}{4a} = \dfrac{1}{4} \\ -\dfrac{1+\Delta}{4a} = \dfrac{1}{6} \end{cases}$$

al posto di questa posso mettere

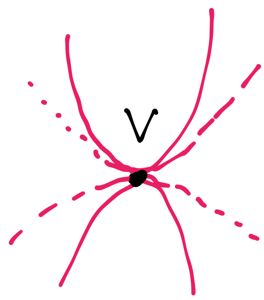
$$\frac{1}{4} = \frac{1}{4}a + \frac{1}{2}b + c$$

$$\rightarrow \begin{cases} a = 3 \\ b = -3 \\ c = 1 \end{cases} \qquad \boxed{y = 3x^2 - 3x + 1}$$

ATTENZIONE!

Se avessi solo il vertice $V\left(\frac{1}{2}, \frac{1}{4}\right)$

$$y = ax^2 + bx + c$$



$$\begin{cases} -\dfrac{b}{2a} = \dfrac{1}{2} \\ -\dfrac{\Delta}{4a} = \dfrac{1}{4} \\ \dfrac{1}{4} = \dfrac{1}{4}a + \dfrac{1}{2}b + c \end{cases} \qquad \begin{cases} b = -a \\ \overset{b^2-4ac}{\Delta} = -a \\ 1 = a + 2b + 4c \end{cases} \qquad \begin{cases} b = -a \\ a^2 - 4ac = -a \\ a + 2b + 4c = 1 \end{cases}$$

$$\begin{cases} b = -a \\ a - 4c = -1 \\ a + 2b + 4c = 1 \end{cases} \qquad \begin{cases} b = -a \\ 4c = a + 1 \\ a - 2a + a + 1 = 1 \Rightarrow 0 = 0 \end{cases}$$

INDETERMINATO

345 $A(-2; 5)$, $B(1; -7)$, $x = -\frac{5}{2}$.

$\uparrow$ ASSE

$x = -\frac{b}{2a}$

$y = ax^2 + bx + c$

$$\begin{cases} -\frac{b}{2a} = -\frac{5}{2} \\ 5 = 4a - 2b + c \\ -7 = a + b + c \end{cases}$$

A

B

e risolvo....

SE HO FUOCO E DIRETRICE....

$y = ax^2 + bx + c$

$F\left(1, \frac{1}{4}\right)$

$d: y = -\frac{1}{4}$

$$\begin{cases} -\frac{b}{2a} = 1 \\ \frac{1-\Delta}{4a} = \frac{1}{4} \\ -\frac{1+\Delta}{4a} = -\frac{1}{4} \end{cases}$$

oppure ...

$P(x, y)$

$\overline{PF} = d(P, d)$ DEFINIZIONE DI PARABOLA

$$\sqrt{(x-1)^2 + \left(y - \frac{1}{4}\right)^2} = \left| y - \left(-\frac{1}{4}\right) \right|$$

$$(x-1)^2 + \left(y - \frac{1}{4}\right)^2 = \left| y + \frac{1}{4} \right|^2$$

$$x^2 + 1 - 2x + \cancel{y^2} + \cancel{\frac{1}{16}} - \frac{1}{2}y = \cancel{y^2} + \cancel{\frac{1}{16}} + \frac{1}{2}y$$

$$y = x^2 - 2x + 1$$

372 Determina l'equazione della parabola $y = ax^2 + bx + c$ passante per i punti $A(1;\ 2)$, $B(3;\ 0)$ e tangente alla bisettrice del secondo e quarto quadrante. $[y = 3x^2 - 13x + 12]$

$y = -x$

$y = ax^2 + bx + c$

$$A \rightarrow \begin{cases} 2 = a + b + c \\ 0 = 9a + 3b + c \end{cases} \leftarrow B \qquad \begin{cases} c = 2 - a - b \\ 9a + 3b + 2 - a - b = 0 \end{cases}$$

$$\begin{cases} c = 2 - a - b \\ 2b = -8a - 2 \rightarrow b = -4a - 1 \end{cases} \qquad \begin{cases} c = 2 - a + 4a + 1 \\ b = -4a - 1 \end{cases}$$

$$\begin{cases} b = -4a - 1 \\ c = 3a + 3 \end{cases} \qquad \boxed{y = ax^2 + (-4a - 1)x + 3a + 3}$$

$$\begin{cases} y = ax^2 + (-4a - 1)x + 3a + 3 \\ y = -x \end{cases}$$

$-x = ax^2 + (-4a - 1)x + 3a + 3$

$ax^2 + (-4a - 1)x + 3a + 3 + x = 0$

$ax^2 + (-4a \cancel{-1} \cancel{+1})x + 3a + 3 = 0$

$ax^2 \underbrace{-4a}_{b}x + \underbrace{3a + 3}_{c} = 0$

CONDIZ. DI TANG.

$\Delta = 0$

$b^2 - 4ac \qquad 16a^2 - 4a(3a + 3) = 0$

$\cancel{a = 0}$

$\boxed{a = 3}$

$16a - 4(3a + 3) = 0$

$16a - 12a - 12 = 0$

$$\begin{cases} a = 3 \\ b = -13 \\ c = 12 \end{cases} \qquad \boxed{y = 3x^2 - 13x + 12}$$