

SOLUZIONI II° CLASSICO - 05/12/15

1) $e = \sqrt{13}$; $2e = 4 \Rightarrow e = 2$. $b^2 = c^2 - a^2 \Rightarrow b = 3$
 $(b^2 = 9)$

$$\boxed{\frac{x^2}{4} - \frac{y^2}{9} = 1}$$

2) $b = 4$; $e = 2 \Rightarrow \frac{c}{b} = 2 \Rightarrow \frac{c}{4} = 2 \Rightarrow c = 8 \Rightarrow$
 $a^2 = c^2 - b^2 \Rightarrow a^2 = 64 - 16 = 48$;

$$\boxed{\frac{x^2}{48} - \frac{y^2}{16} = -1}$$

3) $e = 3$; $\frac{b^2}{c} = 2 \Rightarrow b^2 = 3 \cdot 2 \Rightarrow b^2 = 6 \Rightarrow e^2 = 9 - 6 = 3$

$$\boxed{\frac{x^2}{3} - \frac{y^2}{6} = -1}$$

4) $e = 5$; $\frac{b}{e} = 2 \Rightarrow b = 2 \cdot 5 \Rightarrow b = 10$;

$$\boxed{\frac{x^2}{25} - \frac{y^2}{100} = 1}$$

5) $\frac{b}{e} = 1 \Rightarrow b = e$; $\frac{e^2}{c} = 2 \Rightarrow e^2 = 2c$;

poiché $c = \sqrt{e^2 + b^2} = \sqrt{2e^2} = \sqrt{2} \cdot e \Rightarrow e^2 = 2 \cdot \sqrt{2} \cdot e$
 $\Rightarrow (e \neq 0) \quad e = 2\sqrt{2} \Rightarrow e^2 = 8$;

$$\boxed{\frac{x^2}{8} - \frac{y^2}{8} = 1}$$

6) $\frac{b}{e} = \frac{1}{3} \Rightarrow e = 3b$; $e = 2\sqrt{5}$; $e = \sqrt{e^2 + b^2} = \sqrt{10b^2} \Rightarrow$
 $e = \sqrt{10} \cdot b \Rightarrow 2\sqrt{5} = \sqrt{10} \cdot b \Rightarrow b = \frac{2\sqrt{5}}{\sqrt{10}} = 2 \cdot \sqrt{\frac{1}{2}} = \frac{2}{\sqrt{2}} = \sqrt{2}$
 $\Rightarrow e = 3 \cdot \sqrt{2}$;

$$\boxed{\frac{x^2}{18} - \frac{y^2}{2} = -1}$$

7) $\frac{b^2}{c} = 4$; $\frac{e}{b} = \sqrt{2}$; $\begin{cases} c = b^2/4 \\ b^2/4 = \sqrt{2} \end{cases} \Rightarrow \begin{cases} c = 32/4 = 8 \\ b = 4\sqrt{2} (= \sqrt{32}) \end{cases}$
 $e = \sqrt{8^2 - (4\sqrt{2})^2} = \sqrt{64 - 32} = \sqrt{32}$;

$$\boxed{\frac{x^2}{32} - \frac{y^2}{32} = -1}$$

8) $b = 3$; $e = 5$; $a = \sqrt{5^2 - 3^2} = 4$;

$$\boxed{\frac{x^2}{16} - \frac{y^2}{9} = -1}$$

9) $e = 6$; $\frac{e^2}{c} = 4 \Rightarrow c = \frac{36}{4} = 9 \Rightarrow b = \sqrt{9^2 - 6^2} = \sqrt{45}$;

$$\boxed{\frac{x^2}{36} - \frac{y^2}{45} = 1}$$

10) $e = 2$; $\frac{e}{a} = 2 \Rightarrow a = \frac{2}{2} = 1$; $b = \sqrt{2^2 - 1^2} = \sqrt{3}$;

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