In[8]:= $\texttt{Solve}\left[\left\{\texttt{a}^2 == \texttt{y}^2 + \texttt{x}^2\right\}, \texttt{y}\right]$

Out[8]= $\left\{\left\{y \to -\sqrt{a^2 - x^2}\right\}, \left\{y \to \sqrt{a^2 - x^2}\right\}\right\}$

In[10]:= $\texttt{Solve}\left[\left\{\texttt{b}^2 == \texttt{y}^2 + (\texttt{r} - \texttt{x})^2\right\}, \texttt{x}\right]$

Out[10]= $\left\{\left\{x \to r - \sqrt{b^2 - y^2}\right\}, \left\{x \to r + \sqrt{b^2 - y^2}\right\}\right\}$

In[6]:= $\texttt{Eliminate}\left[\left\{\texttt{a}^2 == \texttt{y}^2 + \texttt{x}^2, \texttt{b}^2 == \texttt{y}^2 + (\texttt{r} - \texttt{x})^2\right\}, \texttt{x}\right]$

Out[6]= $-b^4 + 2 b^2 r^2 - r^4 - 4 r^2 y^2 == a^4 + a^2 \left(-2 b^2 - 2 r^2\right)$

In[17]:= $\texttt{Solve}\left[\left\{-\texttt{b}^4 + 2 \texttt{b}^2 \texttt{r}^2 - \texttt{r}^4 - 4 \texttt{r}^2 \texttt{y}^2 == \texttt{a}^4 + \texttt{a}^2 \left(-2 \texttt{b}^2 - 2 \texttt{r}^2\right)\right\}, \texttt{y}\right]$

Out[17]= $\left\{\left\{y \to -\dfrac{\mathbb{i} \sqrt{a^4 + b^4 - 2 b^2 r^2 + r^4 + a^2 \left(-2 b^2 - 2 r^2\right)}}{2 r}\right\}, \left\{y \to \dfrac{\mathbb{i} \sqrt{a^4 + b^4 - 2 b^2 r^2 + r^4 + a^2 \left(-2 b^2 - 2 r^2\right)}}{2 r}\right\}\right\}$

In[18]:= $\texttt{Eliminate}\left[\left\{\texttt{a}^2 == \texttt{y}^2 + \texttt{x}^2, \texttt{b}^2 == \texttt{y}^2 + (\texttt{r} - \texttt{x})^2\right\}, \texttt{y}\right]$

Out[18]= $b^2 - r^2 + 2 r x == a^2$

In[20]:= $\texttt{Solve}\left[\texttt{b}^2 - \texttt{r}^2 + 2 \texttt{r} \texttt{x} == \texttt{a}^2, \texttt{x}\right]$

Out[20]= $\left\{\left\{x \to \dfrac{a^2 - b^2 + r^2}{2 r}\right\}\right\}$

In[21]:= $\texttt{Simplify}\left[-\texttt{b}^4 + 2 \texttt{b}^2 \texttt{r}^2 - \texttt{r}^4 - 4 \texttt{r}^2 \texttt{y}^2 == \texttt{a}^4 + \texttt{a}^2 \left(-2 \texttt{b}^2 - 2 \texttt{r}^2\right)\right]$

Out[21]= $a^4 + b^4 + r^4 + 4 r^2 y^2 == 2 b^2 r^2 + 2 a^2 \left(b^2 + r^2\right)$

In[22]:= $\texttt{Solve}\left[\texttt{a}^4 + \texttt{b}^4 + \texttt{r}^4 + 4 \texttt{r}^2 \texttt{y}^2 == 2 \texttt{b}^2 \texttt{r}^2 + 2 \texttt{a}^2 \left(\texttt{b}^2 + \texttt{r}^2\right), \texttt{y}\right]$

Out[22]= $\left\{\left\{y \to -\dfrac{\sqrt{-a^4 + 2 a^2 b^2 - b^4 + 2 a^2 r^2 + 2 b^2 r^2 - r^4}}{2 r}\right\}, \left\{y \to \dfrac{\sqrt{-a^4 + 2 a^2 b^2 - b^4 + 2 a^2 r^2 + 2 b^2 r^2 - r^4}}{2 r}\right\}\right\}$