In[2]:=
```
Eliminate[{a^2 == (x - xl)^2 + y^2, b^2 == (x - xr)^2 + y^2}, y]
```

Out[2]=
$$b^2 - 2\,x\,xl + xl^2 + 2\,x\,xr - xr^2 == a^2$$

In[3]:=
```
Solve[b^2 - 2 x xl + xl^2 + 2 x xr - xr^2 == a^2, x]
```

Out[3]=
$$\left\{\left\{x \to \frac{-a^2 + b^2 + xl^2 - xr^2}{2\,(xl - xr)}\right\}\right\}$$

In[6]:=
```
FullSimplify[(-a^2 + b^2 + xl^2 - xr^2)/(2 (xl - xr))]
```

Out[6]=
$$\frac{-a^2 + b^2 + xl^2 - xr^2}{2\,(xl - xr)}$$

In[7]:=
```
Eliminate[{a^2 == (x - xl)^2 + y^2, b^2 == (x - xr)^2 + y^2}, x]
```

Out[7]=
$$-b^4 + 2\,b^2\,xl^2 - xl^4 - 4\,b^2\,xl\,xr + 4\,xl^3\,xr + 2\,b^2\,xr^2 - 6\,xl^2\,xr^2 + 4\,xl\,xr^3 - xr^4 - 4\,xl^2\,y^2 + 8\,xl\,xr\,y^2 - 4\,xr^2\,y^2 == a^4 + a^2\left(-2\,b^2 - 2\,xl^2 + 4\,xl\,xr - 2\,xr^2\right)$$

In[10]:=
```
Solve[-b^4 + 2 b^2 xl^2 - xl^4 - 4 b^2 xl xr + 4 xl^3 xr + 2 b^2 xr^2 - 6 xl^2 xr^2 + 4 xl xr^3 -
    xr^4 - 4 xl^2 y^2 + 8 xl xr y^2 - 4 xr^2 y^2 == a^4 + a^2 (-2 b^2 - 2 xl^2 + 4 xl xr - 2 xr^2), y]
```

Out[10]=
$$\left\{\left\{y \to -\frac{1}{\sqrt{-4\,xl^2 + 8\,xl\,xr - 4\,xr^2}}\left(\sqrt{a^4 + b^4 - 2\,b^2\,xl^2 + xl^4 + 4\,b^2\,xl\,xr - 4\,xl^3\,xr - 2\,b^2\,xr^2 + 6\,xl^2\,xr^2 - 4\,xl\,xr^3 + xr^4 + a^2\left(-2\,b^2 - 2\,xl^2 + 4\,xl\,xr - 2\,xr^2\right)}\right)\right\},\right.$$
$$\left.\left\{y \to \frac{1}{\sqrt{-4\,xl^2 + 8\,xl\,xr - 4\,xr^2}}\left(\sqrt{a^4 + b^4 - 2\,b^2\,xl^2 + xl^4 + 4\,b^2\,xl\,xr - 4\,xl^3\,xr - 2\,b^2\,xr^2 + 6\,xl^2\,xr^2 - 4\,xl\,xr^3 + xr^4 + a^2\left(-2\,b^2 - 2\,xl^2 + 4\,xl\,xr - 2\,xr^2\right)}\right)\right\}\right\}$$

In[11]:=
```
FullSimplify[1/(Sqrt[-4 xl^2 + 8 xl xr - 4 xr^2]
    (Sqrt[a^4 + b^4 - 2 b^2 xl^2 + xl^4 + 4 b^2 xl xr - 4 xl^3 xr - 2 b^2 xr^2 + 6 xl^2 xr^2 -
      4 xl xr^3 + xr^4 + a^2 (-2 b^2 - 2 xl^2 + 4 xl xr - 2 xr^2)])), xl < xr]
```

Out[11]=
$$\frac{\sqrt{(a - b + xl - xr)\,(a + b + xl - xr)\,(a - b - xl + xr)\,(a + b - xl + xr)}}{2\sqrt{-(xl - xr)^2}}$$