1. $\begin{cases} x+y=8 \\ x-3y=0 \end{cases}$ From the second equation, we have $x=3y$, and substituting this into the first equation gives $3y+y=8 \quad \Leftrightarrow \quad 4y=8 \quad \Leftrightarrow \quad y=2$. Since $x=3y$, we have $x=6$ when $y=2$. Thus the solution is $(6,2)$.

3. $\begin{cases} y=x^2 \\ y=x+6 \end{cases}$ Substituting $y=x^2$ into the second equation gives $x^2=x+6 \quad \Leftrightarrow$ $0=x^2-x-6=(x-3)(x+2) \quad \Rightarrow \quad x=3$ or $x=-2$. So since $y=x^2$, the solutions are $(-2,4)$ and $(3,9)$.

5. $\begin{cases} x^2+y^2=8 \\ x+y=0 \end{cases}$ Solving the second equation for y gives $y=-x$, and substituting this into the first equation gives $x^2+(-x)^2=8$

$\Leftrightarrow \quad 2x^2=8 \quad \Leftrightarrow \quad x=\pm 2$. Thus the solutions are $(2,-2)$ and $(-2,2)$.

7. $\begin{cases} 5x+2y=2 \\ 7x+3y=6 \end{cases}$ Multiplying the first equation by 3 and the second by -2 gives the system $\begin{cases} 15x+6y=6 \\ -14x-6y=-12 \end{cases}$. Adding, we get $x=-6$, and substituting into the first equation in the original system gives $5(-6)+2y=2 \quad \Leftrightarrow \quad 2y=2+30=32 \quad \Leftrightarrow \quad y=16$. The solution is $(-6,16)$.

9. $\begin{cases} x^2-2y=1 \\ x^2+5y=29 \end{cases}$ Subtracting the first equation from the second equation gives $7y=28 \quad \Rightarrow$ $y=4$. Substituting $y=4$ into the first equation of the original system gives $x^2-2(4)=1 \quad \Leftrightarrow$ $x^2=9 \quad \Leftrightarrow \quad x=\pm 3$. The solutions are $(3,4)$ and $(-3,4)$.

11. $\begin{cases} 3x^2-y^2=11 \\ x^2+4y^2=8 \end{cases}$ Multiplying the first equation by 4 gives the system $\begin{cases} 12x^2-4y^2=44 \\ x^2+4y^2=8 \end{cases}$. Adding the equations gives $13x^2=52 \quad \Leftrightarrow \quad x=\pm 2$. Thus, the solutions are $(2,1)$, $(2,-1)$, $(-2,1)$, and $(-2,-1)$.

13. $\begin{cases} y+x^2=4x \\ y+4x=16 \end{cases}$ Subtracting the second equation from the first equation gives $x^2-4x=4x-16$ $\Leftrightarrow \quad x^2-8x+16=0 \quad \Leftrightarrow \quad (x-4)^2=0 \quad \Leftrightarrow \quad x=4$. Substituting this value for x into either of the original equations gives $y=0$. Therefore, the solution is $(4,0)$.

15. $\begin{cases} x-2y=2 \\ y^2-x^2=2x+4 \end{cases}$ Now $x-2y=2 \quad \Leftrightarrow \quad x=2y+2$. Substituting for x gives

$y^2-x^2=2x+4 \quad \Leftrightarrow \quad y^2-(2y+2)^2=2(2y+2)+4 \quad \Leftrightarrow$

$y^2-4y^2-8y-4=4y+4+4 \quad \Leftrightarrow \quad y^2+4y+4=0 \quad \Leftrightarrow \quad (y+2)^2=0 \quad \Leftrightarrow \quad y=-2$.

$x=2(-2)+2=-2$. Thus the solution is $(-2,-2)$.