$$
\begin{gathered}
-x+4 y=9 \\
3 x+2 y=1 \\
-4+4=9 \\
3+20=1 \\
=1, \quad-2 \quad+\begin{aligned}
-x(2)=7 \neq 9 \\
\text { FALSE }
\end{aligned}
\end{gathered}
$$

function " $-x+4 y=q$ " $(\mathbb{R}, x, \mathbb{R}, y)$
\}

$$
\text { if }(-x+4 y=9)
$$

$\varepsilon_{\text {return }}$ TRUE j $\xi$ else $\{$ return FALSE;

$$
3
$$

function " $O=5$ " $(\mathbb{R} x, \mathbb{R} y)$
$\xi$

$$
\text { If }(0=5)\{
$$

return TRUE
3 else $\{$ return FAlSE:
$3^{3}$

Find $(u, v)$ :
" $-x+4 y=9$ " $(u, v)$ and "3x+2y=1" (u,v) and! prot "Yippee!"; (Eureka)

## Solving Linear Systems: Key Step

If $x$ and $y$ satisfy

$$
\begin{array}{r}
-x+4 y=9 \\
3 x+2 y=1
\end{array}
$$

then $x$ and $y$ also satisfy and vice versa

$$
\begin{aligned}
-x+4 y & =9 \\
14 y & =28
\end{aligned}
$$

then $x$ and $y$ also satisfy and vice versa

$$
\begin{array}{r}
-x+4 y=9 \\
y=2
\end{array}
$$

then $x$ and $y$ also satisfy and vice versa

$$
\begin{array}{r}
-x+8=9 \\
y=2
\end{array}
$$

then $x$ and $y$ also satisfy and vice versa

$$
\begin{aligned}
x & =-1 \\
y & =2
\end{aligned}
$$

$\overrightarrow{\text { iff }}$

