$$
\frac{\operatorname{Term} 1 \uparrow_{\operatorname{Term} 2}^{x^{2}+b x+c} \uparrow_{\text {Term }} 3}{}
$$

Where a, b, c are Real numbers

Examples

$$
\left.\begin{array}{l}
3 x^{2}+2 x+1 \\
4 x^{2}-x+5 \\
x^{2}+3 x-2
\end{array}\right\}
$$

These look the Product from FOIling in Chapter 5.1

How do we factor these trinomials?

* Consider This question from 5.1

Multiply

$$
\begin{aligned}
& (x+5)(x+1) \leftarrow \text { This is what we } \\
& x(x+1)+5(x+1) \\
& x^{2}+x+5 x+1 \\
& x^{2}+6 x+1 \quad \leftarrow \text { this is get to } \\
& \text { we are starting }
\end{aligned}
$$

Let's try that again but with more Variables

$$
\begin{aligned}
& (x+a)(x+b) \\
& x(x+b)+a(x+b) \\
& x^{2}+b x+a x+a b \\
& x^{2}+(b+a) x+a b
\end{aligned}
$$

* Let $a, b$ be any Real numbers

We can Figure out a factor form of a trinomial if we can find two number that add to term z's coefficient and multiply to terms's coefficient.

Lets try
Factor:

$$
\begin{aligned}
& x^{2}+7 x+10 \\
& (x+2)(x+5)
\end{aligned}
$$

| 7 | $x$ |
| :---: | :---: |
| 7 | 10 |
| 11 | $1 \times 10$ |
| 7 | $2 \times 5$ |
|  |  |

$$
\begin{aligned}
& x^{2}+4 x y-12 y^{2} \\
& (x+6 y)(x-2 y)
\end{aligned}
$$



$$
\begin{aligned}
& x^{2}-4 x+3 \\
& (x-4)(x-1)
\end{aligned}
$$

| + | $x$ |
| :---: | :---: |
| -4 | 3 |
| 4 | $1 \times 3$ |
| -4 | $-1 \times-3$ |

$\frac{\text { You by }}{\text { For }}$ +os:

$$
x^{2}+3 x-10
$$

$$
r^{2}-10 r s+9 s^{2}
$$

$$
x^{2}+3 x-10
$$

$r^{-}-10 r s+i s$
ans: $(x+5)(x-2)$
Homework: $3,4,5,8 a, 9,10$

