1) $\frac{5}{4-\sqrt{5}}$ 2) $5\sqrt{27}$ 3) $3x^2+8=23$ 4) $2(x+7)^2=16$

4.6 Complex Numbers

$\sqrt{x^2}=\sqrt{-4}$ ⟶ Could $x=2$ or -2 work?

$2\cdot 2=4$ $\quad -2\cdot -2=4$

*(created) a # called i

$i=\sqrt{-1}$ ... takes care of the negative in $\sqrt{}$

So $\sqrt{x^2}=\sqrt{-4}$

$=\sqrt{-1}\sqrt{4}$

$\downarrow \quad \downarrow$

$i \quad 2$

when $\sqrt{}$ a variable

$=\pm 2i$

So if $i=\sqrt{-1}$, $i^2=(\sqrt{-1})^2=-1$

Example

1) $\sqrt{+25}$ 2) $x^2=-45$ 3) $2x^2+11=-37$

$5i$ $\quad x=\pm 3i\sqrt{5}$ $\quad x=\pm 2i\sqrt{6}$ $\quad \frac{-48}{2}=-24$

4) $4i(-6+i)$

$-24i+4i^2$

$-24i+4(-1)$

$-24i-4$

$-4-24i$

5) $(9-2i)(-4+7i)$

$-36+63i+8i-14i^2$ (-1)

$-36+71i+14$

$-22+71i$

↖ Standard Form ↗

p279:
3- 15 odd, 81
23-27 all

3) $x^2=-28$ 5) $M^2+8=4$ 7) $2x^2+31=9$ 8) $9-4y^2=57$ 9) $6t^2+5=2t^2+1$

11) $-5(n-3)^2=10$ 13) $9+8i+8-9i$ 15) $(-1+i)-(7-5i)$

23) $-i(4-8i)$ 25) $(-2+5i)(-1+4i)$ 27) $(8-3i)(8+3i)$