25 以下のような三角形 △ABC の面積を求めよ.

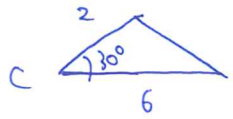
(1) $a=2, b=6, C=30°$

(2) $a=b=c=3$

(3) $a=3, b=4, c=5$

(4) $a=4, b=5, c=7$

(1)



$S=\frac{1}{2}\cdot 2\cdot 6\cdot \sin 30°$

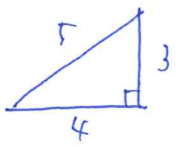
$=\frac{1}{2}\cdot 2\cdot 6\cdot \frac{1}{2}=3$

(2) 正三角形なので、角は全て 60°.

$S=\frac{1}{2}\cdot 3\cdot 3\cdot \sin 60°$

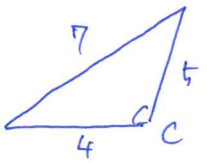
$=\frac{1}{2}\cdot 3\cdot 3\cdot \frac{\sqrt{3}}{2}=\frac{9}{4}\sqrt{3}$

(3) 直角三角形なので.



$S=\frac{1}{2}\cdot 3\cdot 4=6$

(4).



余弦定理より

$7^2=4^2+5^2-2\cdot 4\cdot 5\cdot \cos C$.

$49=16+25-2\cdot 4\cdot 5\cdot \cos C$

$8=-2\cdot 4\cdot 5\cdot \cos C$

$\cos C=-\frac{1}{5}$

$\sin^2 C+\cos^2 C=1$ より

$\sin C=\frac{2\sqrt{6}}{5}$

$\therefore S=\frac{1}{2}\cdot 4\cdot 5\cdot \frac{2\sqrt{6}}{5}$

$=4\sqrt{6}$