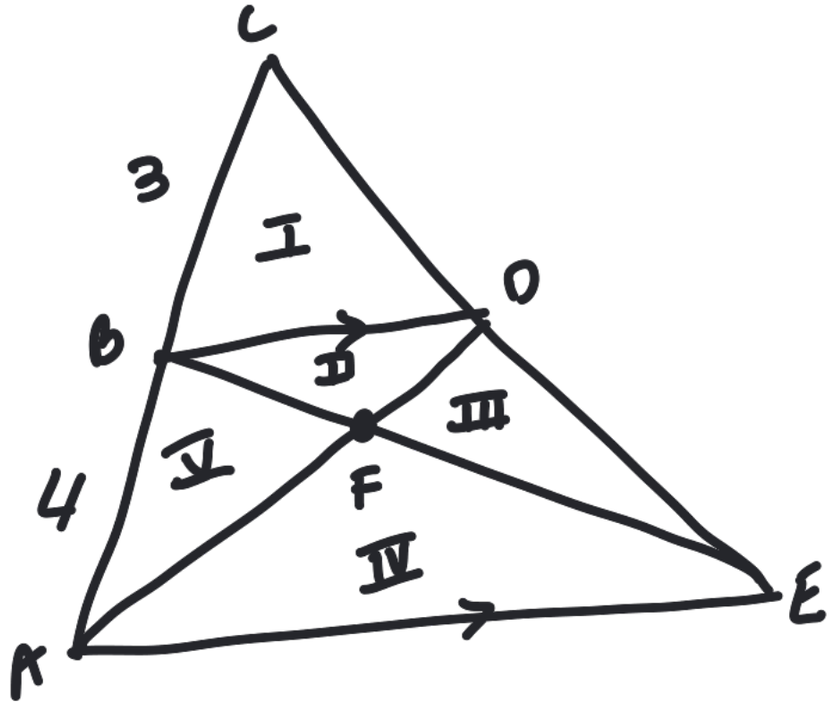
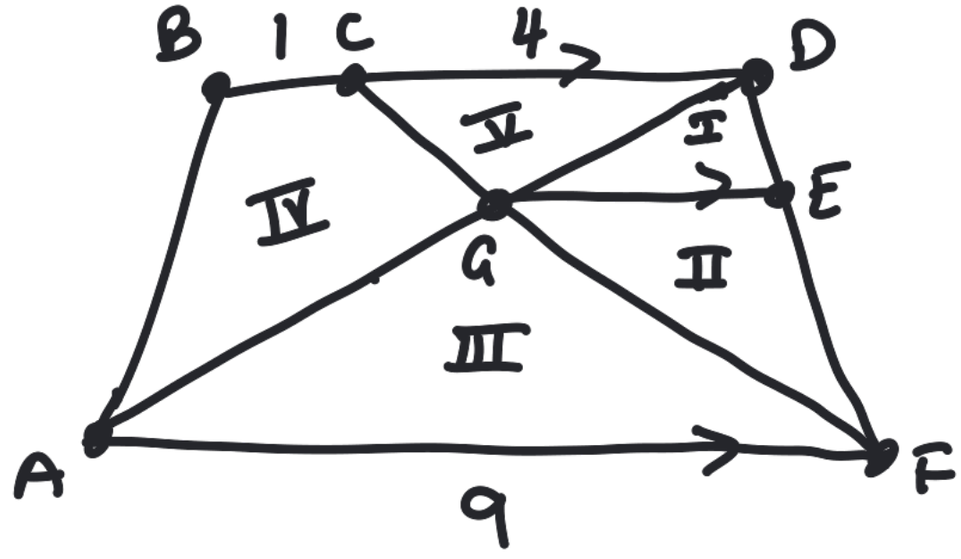
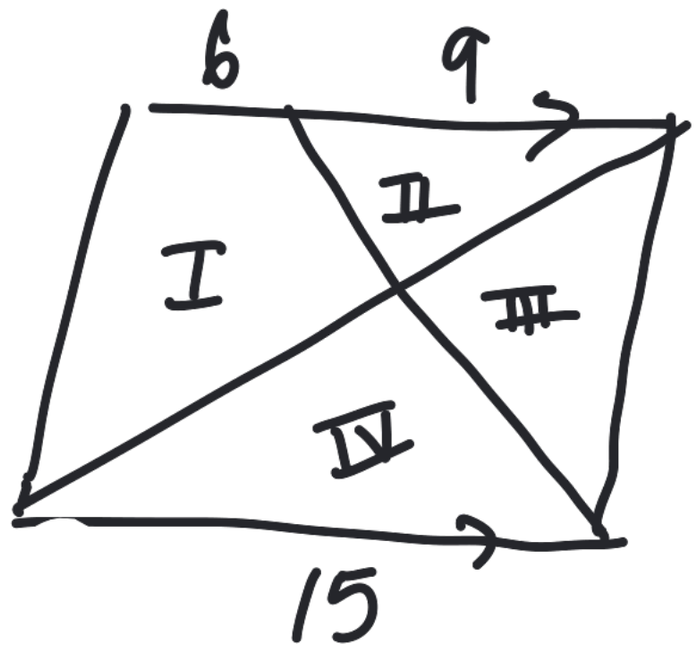
#1


C
3
I
D
B
II
III
4
V
F
IV
A
E

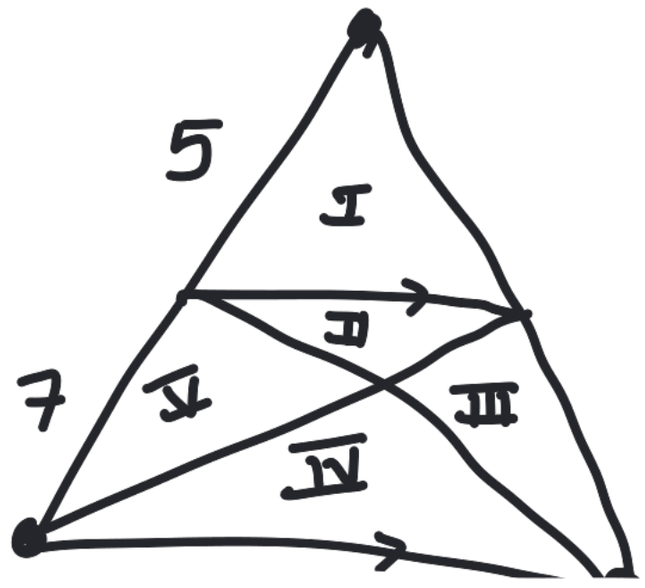
#2


B
1
C
4
D
V
I
IV
E
G
II
III
A
F
9

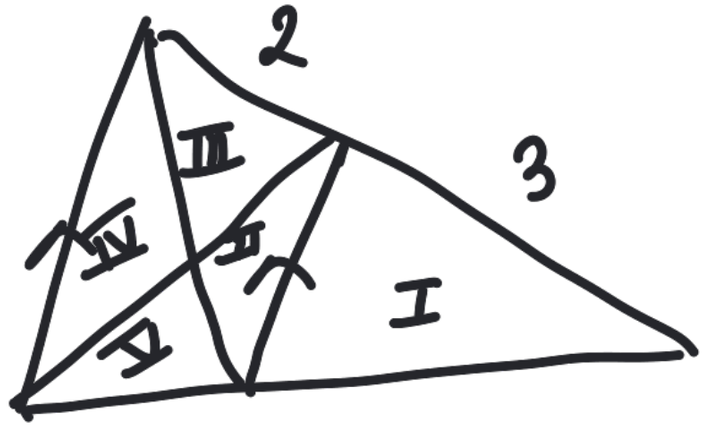
#3


6
9
II
I
III
IV
15

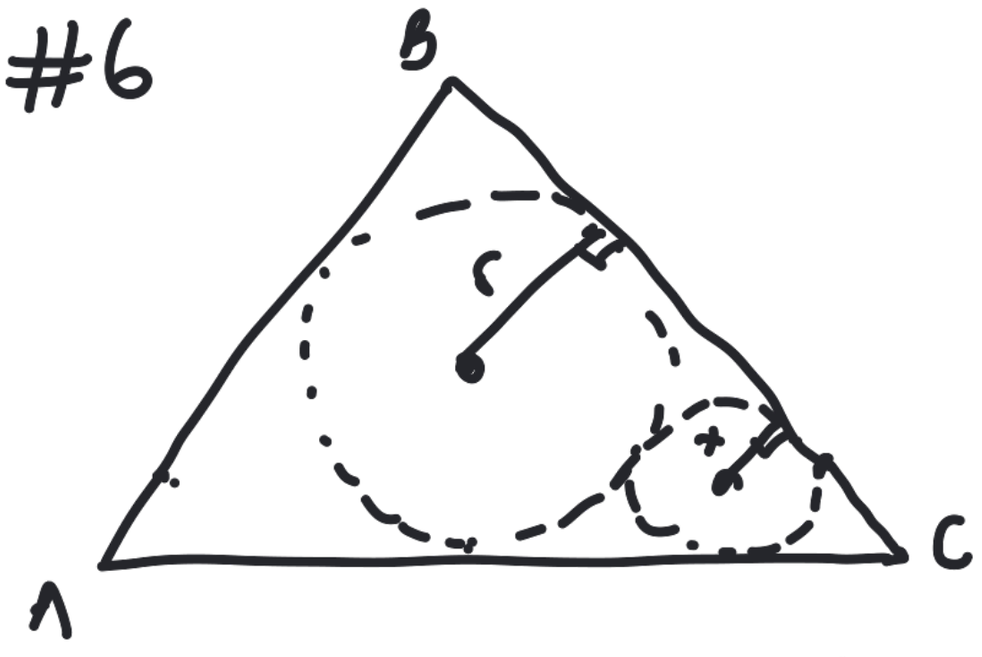
#4


5
I
II
7
V
III
IV

#5



#6



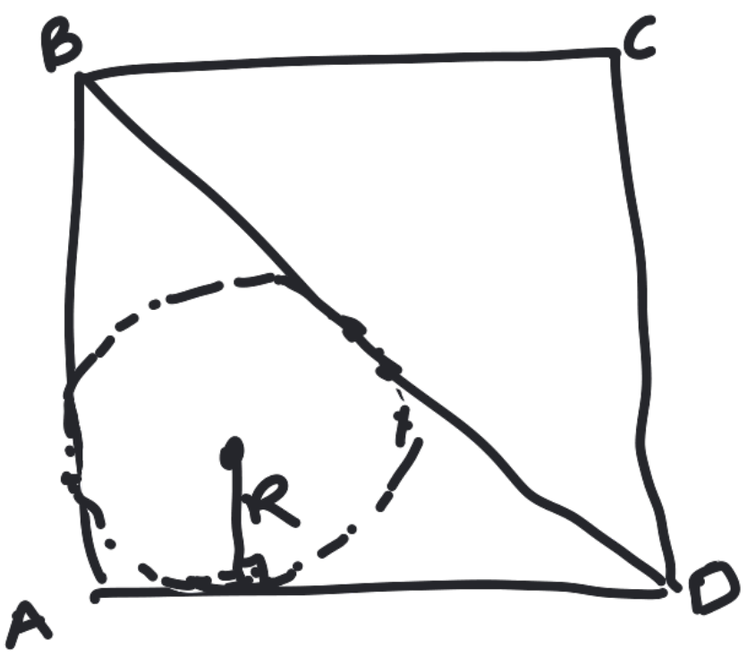
ΔABC is equilateral

$AC = 8$

Find r!

Find x!

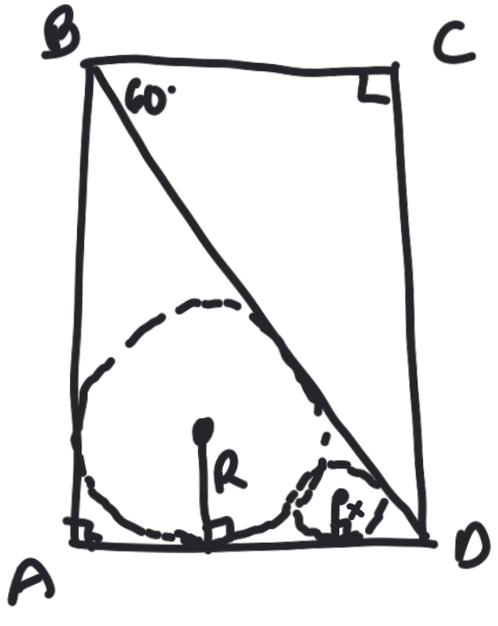
#7



ABCD is a Square

$AB = 6$ Find R!

#8



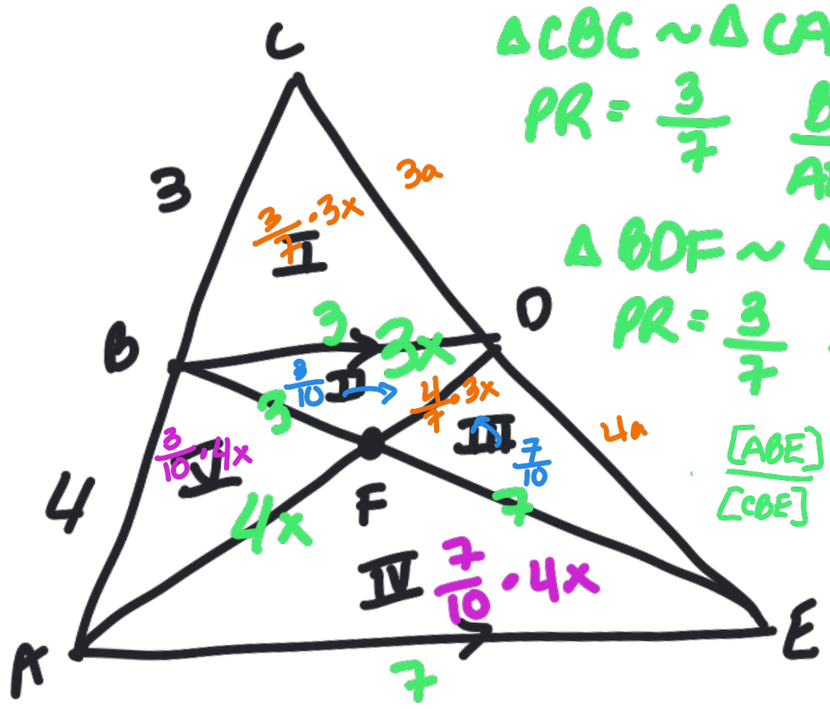
ABCD is a Rectangle

AD = 3

Find R!

Find x!

#1



$\triangle CBC \sim \triangle CAE$ (AA)

$PR = \frac{3}{7}$ $\frac{BD}{AE} = \frac{3}{7}$

$\triangle BDF \sim \triangle EAF$ (AA)

$PR = \frac{3}{7}$ $\frac{BF}{FE} = \frac{DF}{FA} = \frac{3}{7}$

$\frac{[ABE]}{[CDE]} = \frac{3}{4}$

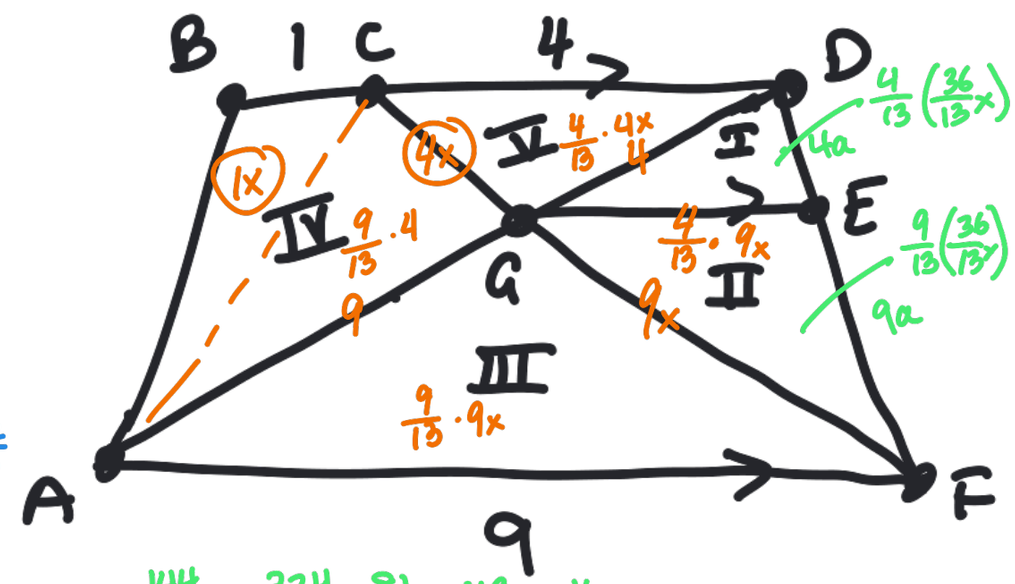
$\frac{9}{7} : \frac{3}{10}\left(\frac{12}{7}\right) : \frac{7}{10}\left(\frac{12}{7}\right) : \frac{28}{10} : \frac{12}{10}$

$\frac{9}{7} : \frac{36}{70} : \frac{84}{70} : \frac{28}{10} : \frac{12}{10}$

$\frac{9}{7} : \frac{18}{35} : \frac{42}{35} : \frac{14}{5} : \frac{6}{5}$

$45 : 18 : 42 : 98 : 42$

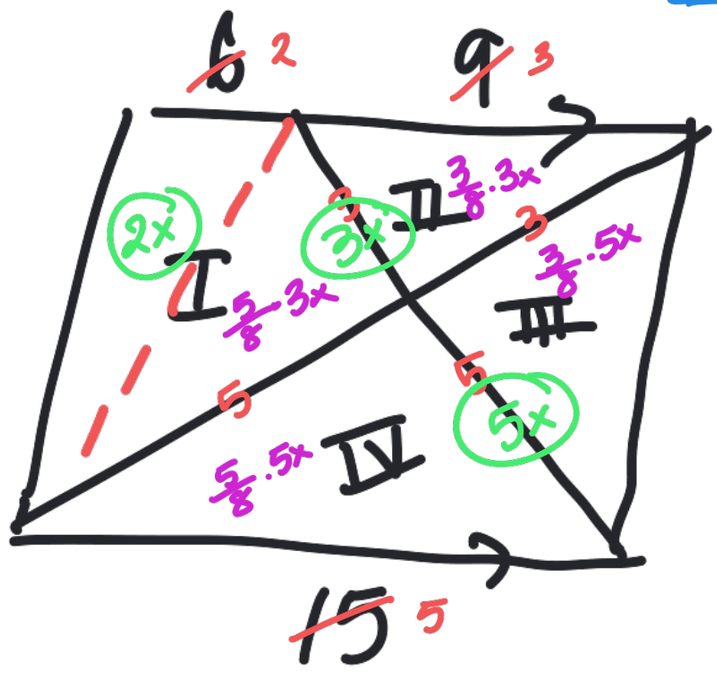
#2



$\frac{144}{169} : \frac{324}{169} : \frac{81}{13} : \frac{49}{13} : \frac{16}{13}$

$144 : 324 : 1053 : 637 : 208$

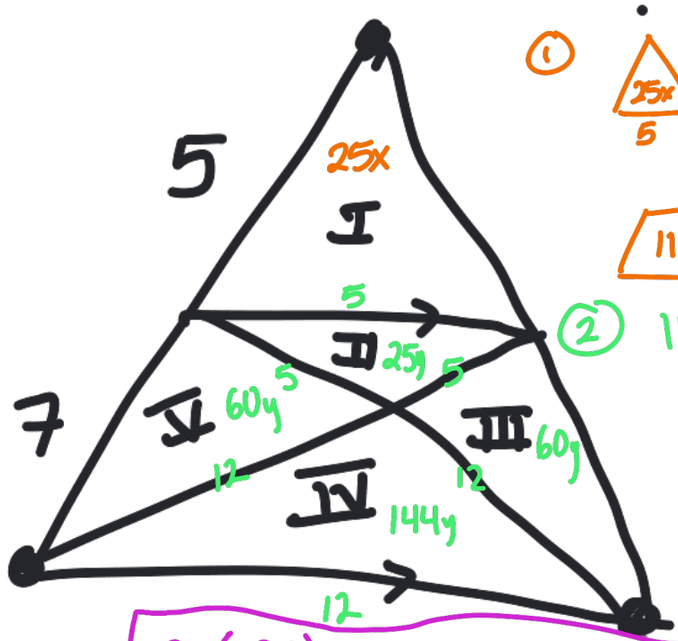
#3



$2 + \frac{15}{8} : \frac{9}{8} : \frac{15}{8} : \frac{25}{8}$

$31 : 9 : 15 : 25$

#4



① $\frac{25x}{5} \sim \frac{144x}{12}$

$119x = 289y$

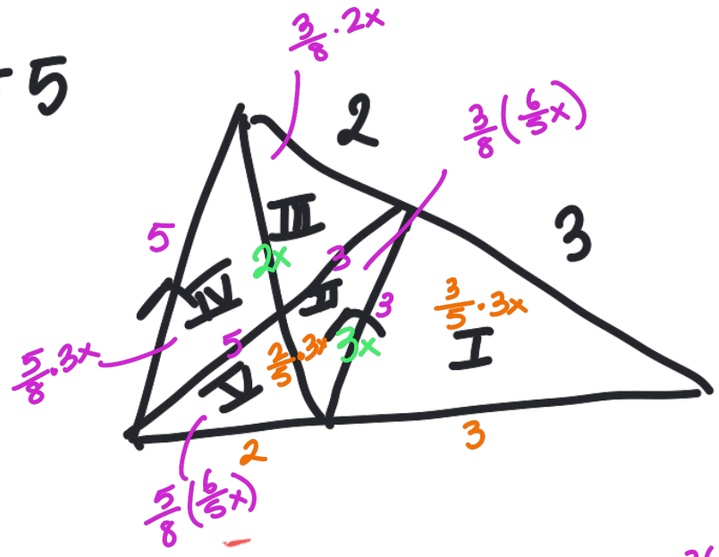
② $119x = 289y$

$x = \frac{289}{119}y$

$25x = 25\left(\frac{289}{119}\right)$

$25\left(\frac{289}{119}\right) : 25 : 60 : 144 : 60$

#5



$\frac{15}{8} = \frac{?}{20}$

$\frac{15 \cdot 20}{2\ 8} = ?$

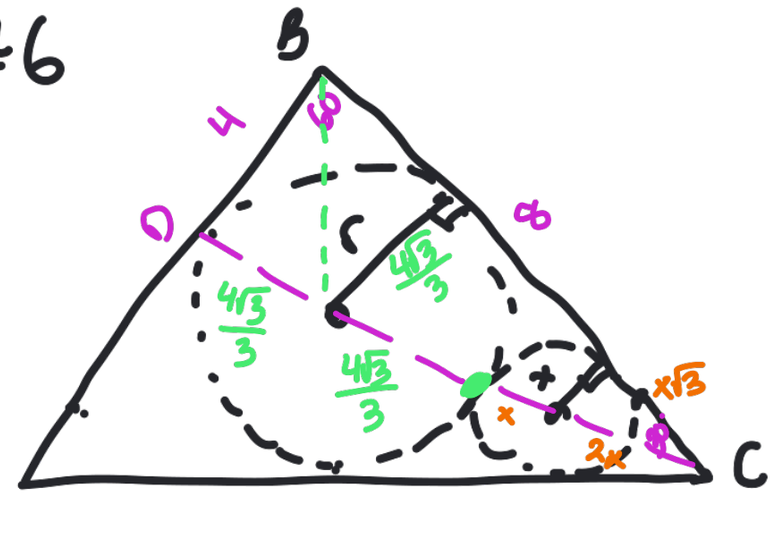
$\frac{9}{5} : \frac{18}{40} : \frac{6}{8} : \frac{15}{8} : \frac{30}{40}$

$\frac{9}{5} : \frac{9}{20} : \frac{3}{4} : \frac{15}{8} : \frac{3}{4}$

$\frac{36}{20} : \frac{9}{20} : \frac{15}{20} : \frac{37.5}{20} : \frac{15}{20}$

$72 : 18 : 30 : 75 : 30$

#6



ΔABC is equilateral

$AC = 8$ $\quad DC = 4\sqrt{3}$

Find r! $\quad r = \frac{4\sqrt{3}}{3}$

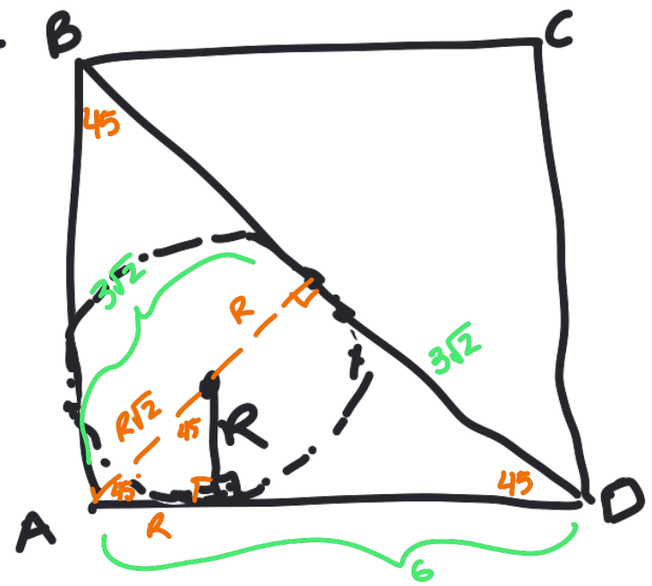
Find x! $\quad 4\sqrt{3} = \frac{8\sqrt{3}}{3} + 3x$

$\frac{12\sqrt{3} - 8\sqrt{3}}{3} = 3x$

$\frac{4\sqrt{3}}{3} = 3x$

$\boxed{\frac{4\sqrt{3}}{9} = x}$

#7



ABCD is a Square

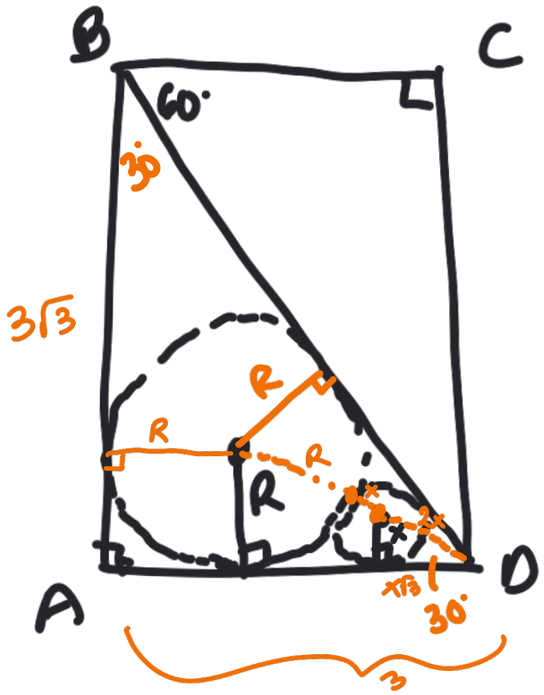
Ab = 6 $\quad$ Find R!

$R\sqrt{2} + R = 3\sqrt{2}$ $\quad \boxed{R = 6 - 3\sqrt{2}}$

$R(\sqrt{2}+1) = 3\sqrt{2}$

$R = \frac{3\sqrt{2}}{\sqrt{2}+1} \cdot \frac{\sqrt{2}-1}{\sqrt{2}-1}$

#8

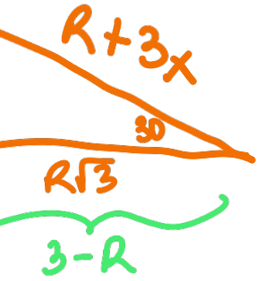


ABCD is a Rectangle

AD = 3

Find R!

Find x!



$3-R=R\sqrt{3}$

$3=R\sqrt{3}+R$

$3=R(\sqrt{3}+1)$

$R=\frac{3}{\sqrt{3}+1}\cdot\frac{\sqrt{3}-1}{\sqrt{3}-1}$

$R=\frac{3\sqrt{3}-3}{3-1}=\boxed{\frac{3\sqrt{3}-3}{2}}$