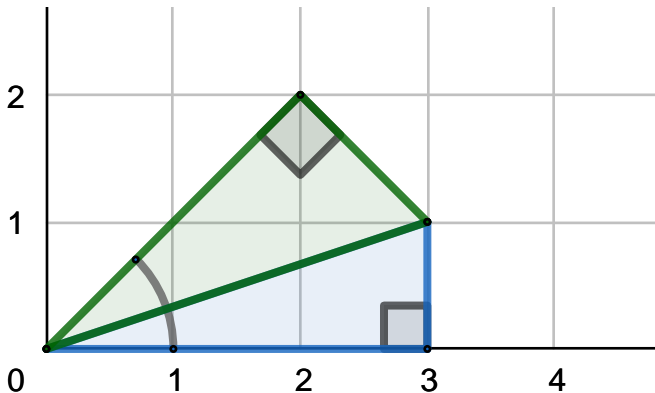


アークタンジェント公式

$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{3}$	Euler
$\frac{\pi}{4} = 4 \arctan \frac{1}{5} - \arctan \frac{1}{239}$	Machin
$\frac{\pi}{4} = 2 \arctan \frac{1}{3} + \arctan \frac{1}{7}$	Hutton
$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{5} + \arctan \frac{1}{8}$	Strassnitzky
$\frac{\pi}{4} = 2 \arctan \frac{1}{2} - \arctan \frac{1}{7}$	Hermann
$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{4} + \arctan \frac{1}{13}$	Størmer
$\frac{\pi}{4} = 2 \arctan \frac{1}{3} + \arctan \frac{1}{12} + \arctan \frac{1}{17}$	Størmer
$\frac{\pi}{4} = 2 \arctan \frac{1}{3} + \arctan \frac{1}{8} + \arctan \frac{1}{57}$	Størmer
$\frac{\pi}{4} = 2 \arctan \frac{1}{3} + \arctan \frac{1}{9} + \arctan \frac{1}{32}$	Størmer
$\frac{\pi}{4} = 2 \arctan \frac{1}{2} - \arctan \frac{1}{5} + \arctan \frac{1}{18}$	Størmer
$\frac{\pi}{4} = 2 \arctan \frac{1}{2} - \arctan \frac{1}{9} - \arctan \frac{1}{32}$	Størmer
$\frac{\pi}{4} = 2 \arctan \frac{1}{2} - \arctan \frac{1}{6} + \arctan \frac{1}{43}$	Størmer
$\frac{\pi}{4} = 2 \arctan \frac{1}{2} - \arctan \frac{1}{8} - \arctan \frac{1}{57}$	Størmer
$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{5} + \arctan \frac{1}{13} + \arctan \frac{1}{21}$	Matsumoto
$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{4} + \arctan \frac{1}{23} + \arctan \frac{1}{30}$	Matsumoto
$\frac{\pi}{4} = \arctan \frac{1}{3} + \arctan \frac{1}{5} + \arctan \frac{1}{7} + \arctan \frac{1}{8}$	Takano
$\frac{\pi}{4} = \arctan \frac{1}{3} + \arctan \frac{1}{4} + \arctan \frac{1}{7} + \arctan \frac{1}{13}$	Takano
$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{5} + \arctan \frac{1}{9} + \arctan \frac{1}{73}$	Takano
$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{4} + \arctan \frac{1}{15} + \arctan \frac{1}{98}$	Takano
$\frac{\pi}{2} = 2 \arctan \frac{1}{2} + \arctan \frac{4}{7} + \arctan \frac{1}{8}$	Newton
$\frac{\pi}{4} = \arctan \frac{1}{7} + \arctan \frac{1}{8} + \arctan \frac{4}{7}$	

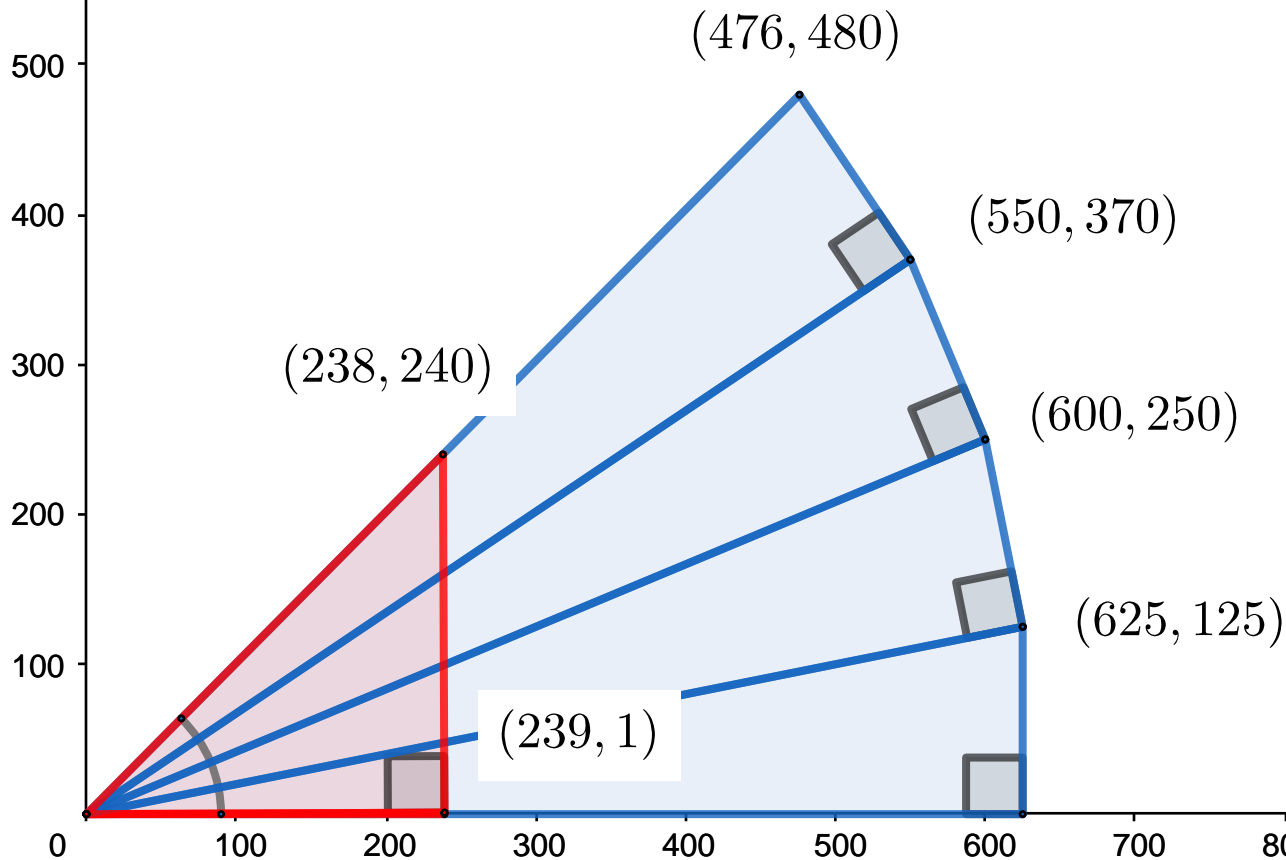
$$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{3} \quad \text{Euler}$$

another solution of Nelsen (1993) page 39



$$\frac{\pi}{4} = 4 \arctan \frac{1}{5} - \arctan \frac{1}{239} \quad \text{Machin}$$

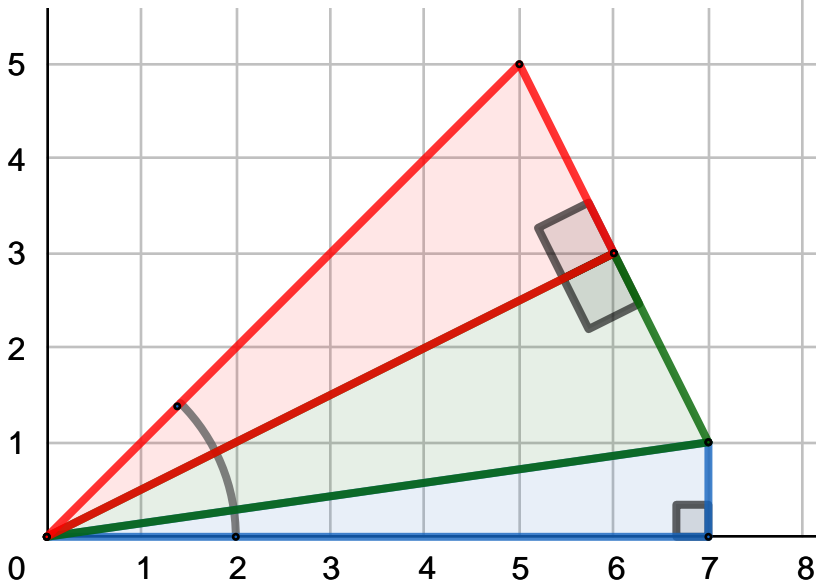
another solution of Heo (2015) and Nelsen (1990)



8

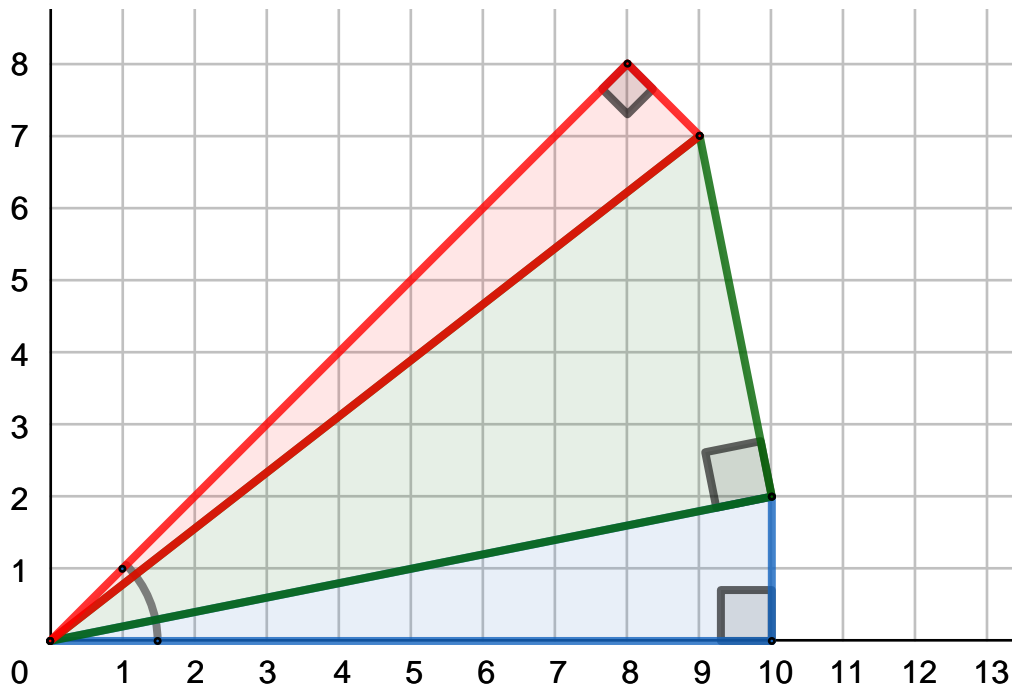
$$\frac{\pi}{4} = 2 \arctan \frac{1}{3} + \arctan \frac{1}{7} \quad \text{Hutton}$$

Reference: Nelsen (2015) page 75



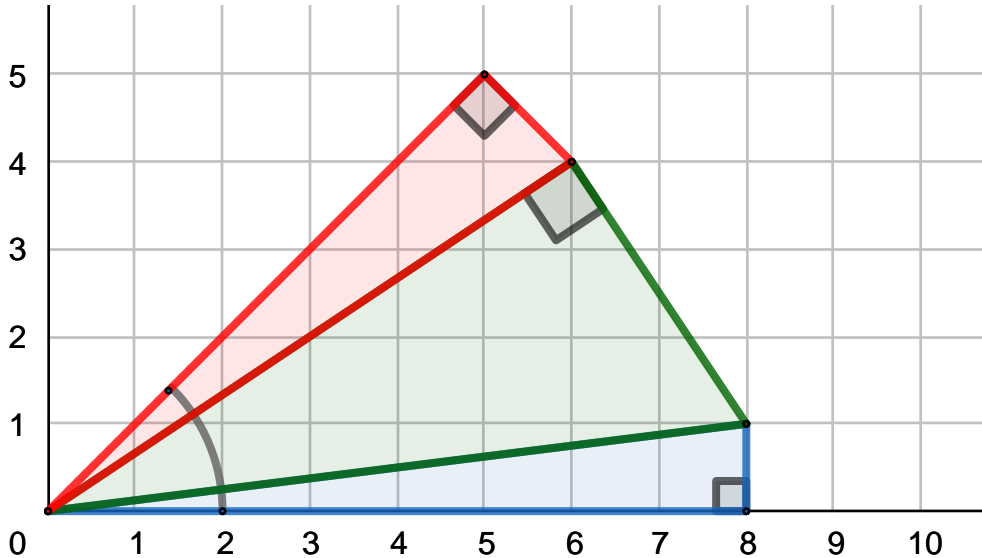
$$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{5} + \arctan \frac{1}{8} \quad \text{Strassnitzky}$$

Reference: Nelsen (2015) page 75



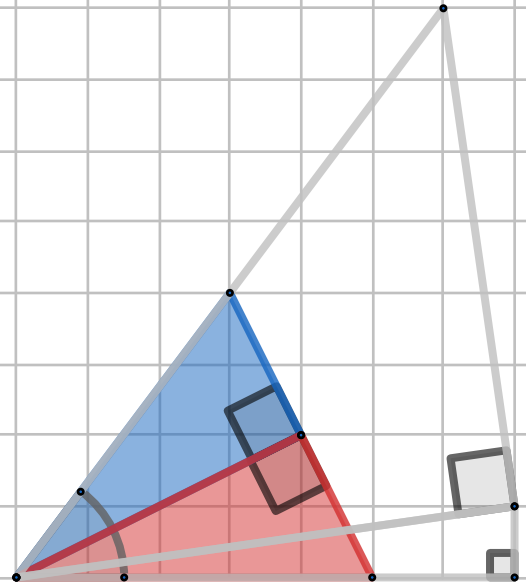
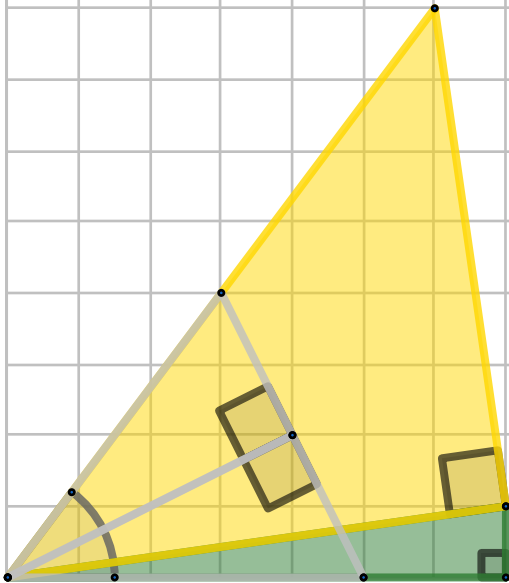
$$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{5} + \arctan \frac{1}{8} \quad \text{Strassnitzky}$$

I improved Nelsen (2015) page 75.



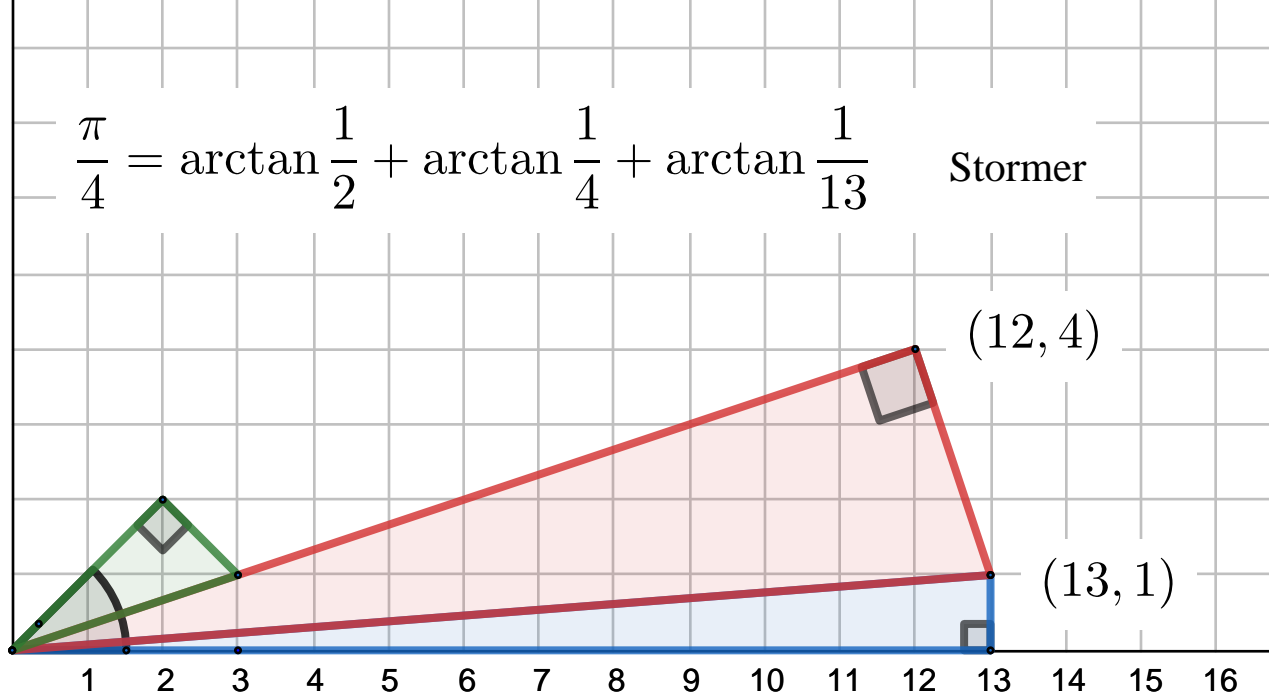
$$\arctan \frac{1}{7} + \frac{\pi}{4} = 2 \arctan \frac{1}{2} \quad \text{Hermann}$$

I slightly improved Unal (2014a).

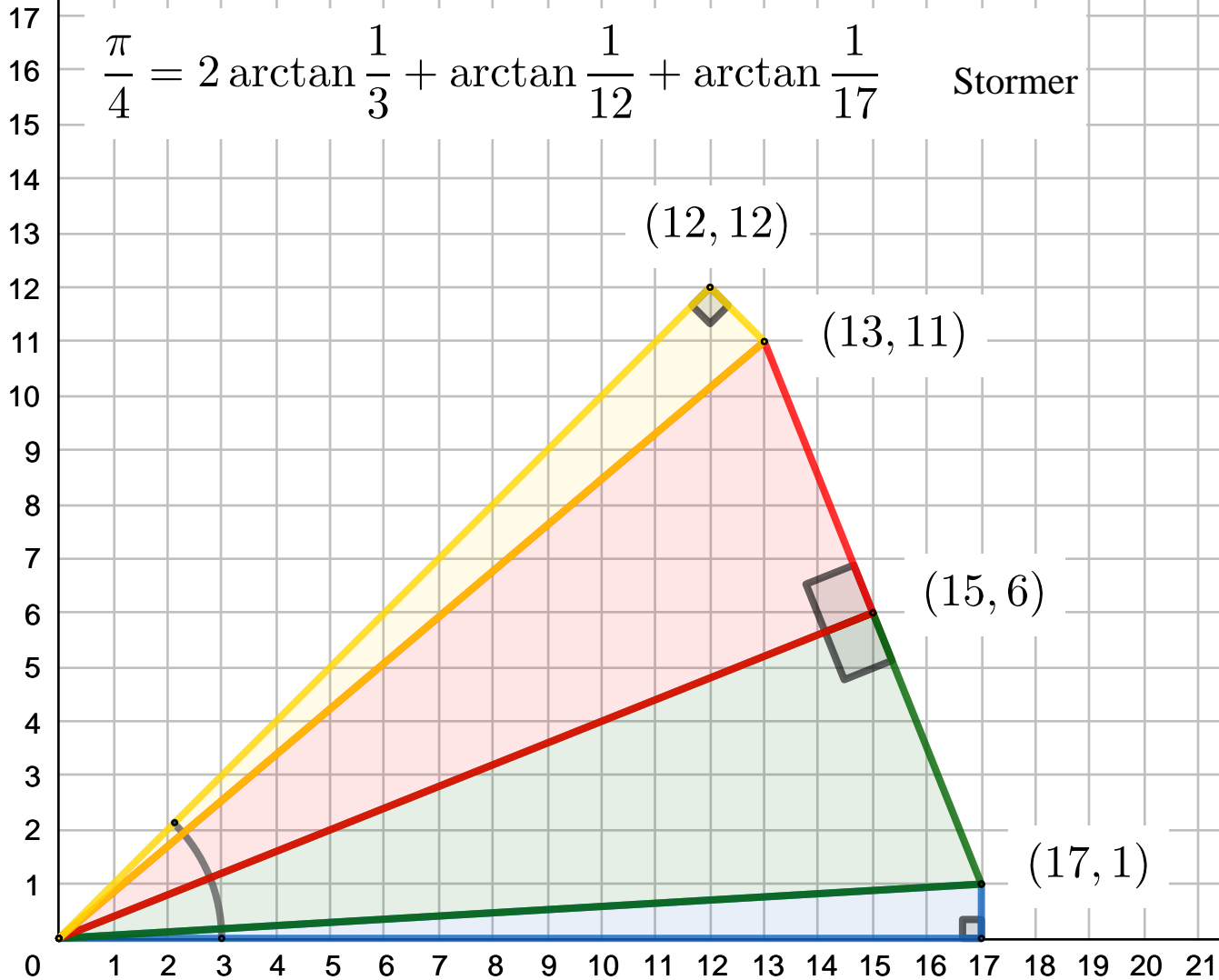


8
7
6
5
4
3
2
1
0

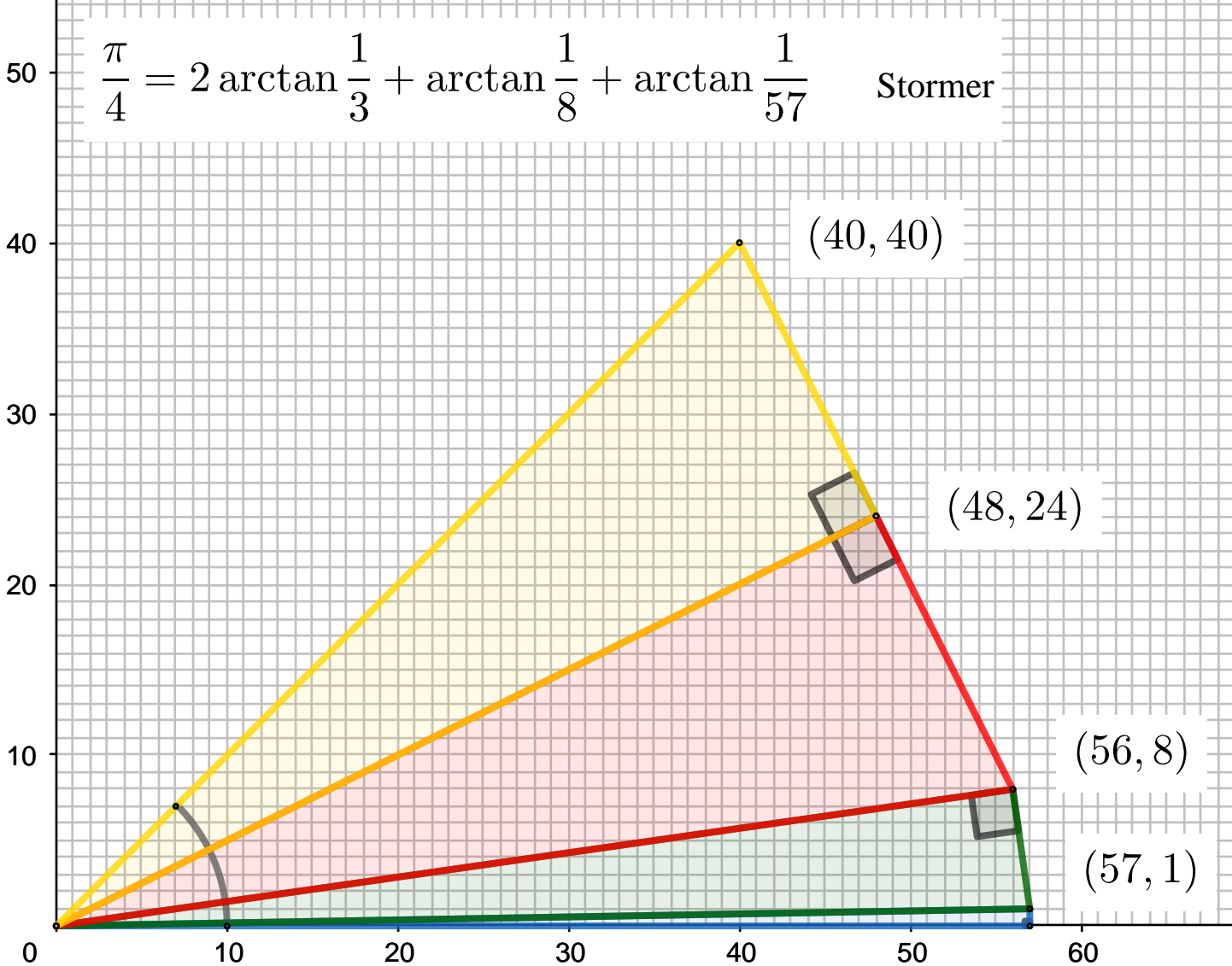
$$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{4} + \arctan \frac{1}{13} \quad \text{Stormer}$$



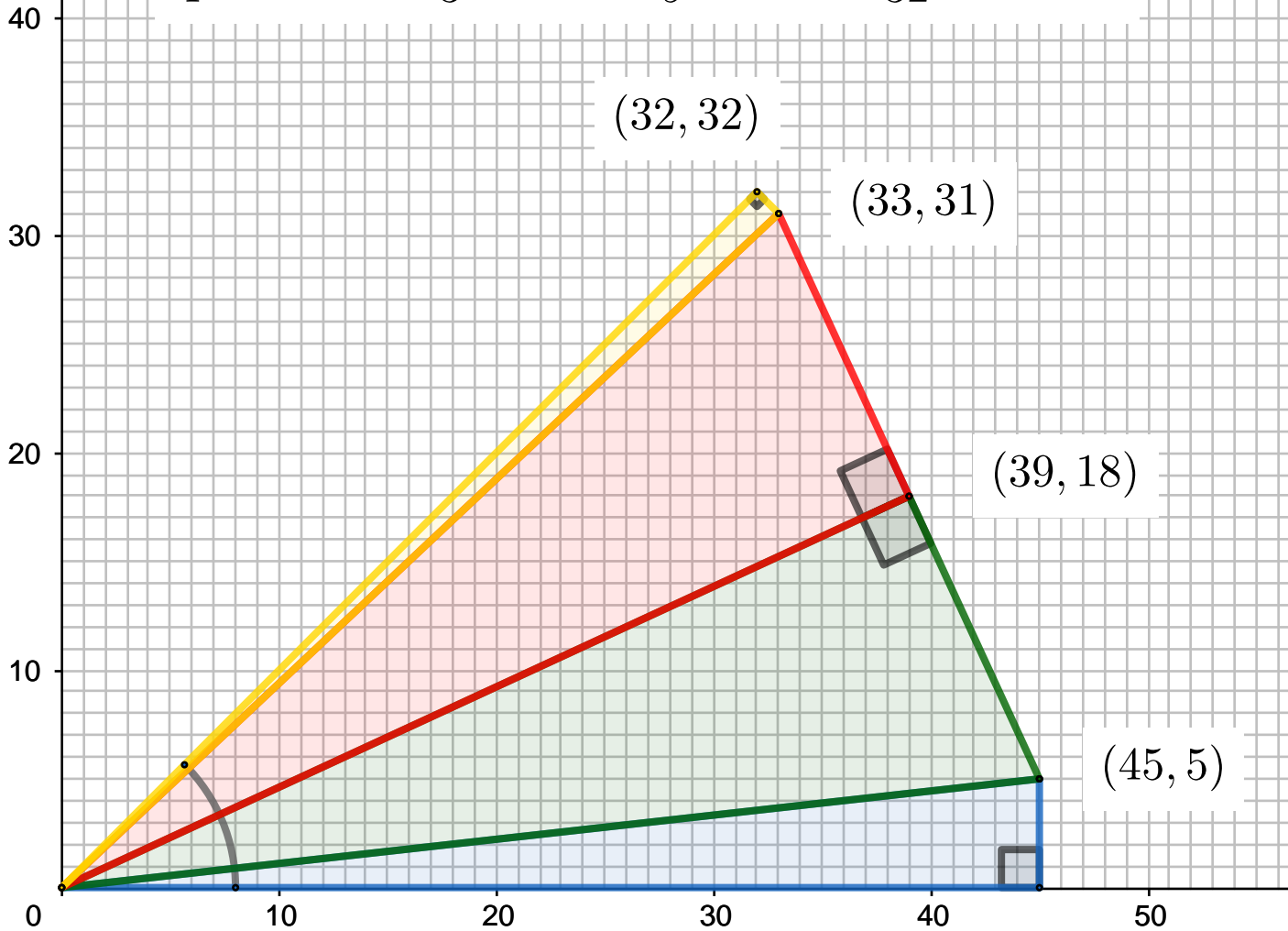
$$\frac{\pi}{4} = 2 \arctan \frac{1}{3} + \arctan \frac{1}{12} + \arctan \frac{1}{17} \quad \text{Stormer}$$



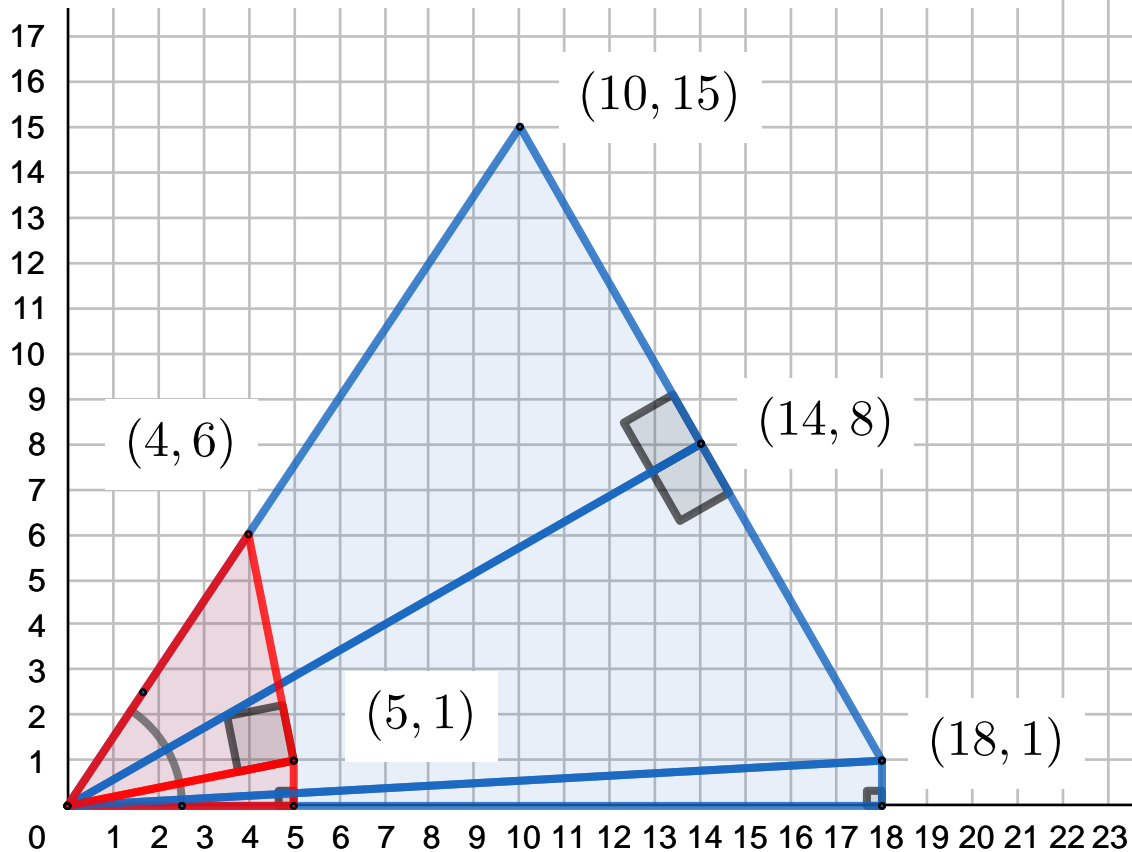
$$\frac{\pi}{4} = 2 \arctan \frac{1}{3} + \arctan \frac{1}{8} + \arctan \frac{1}{57} \quad \text{Stormer}$$



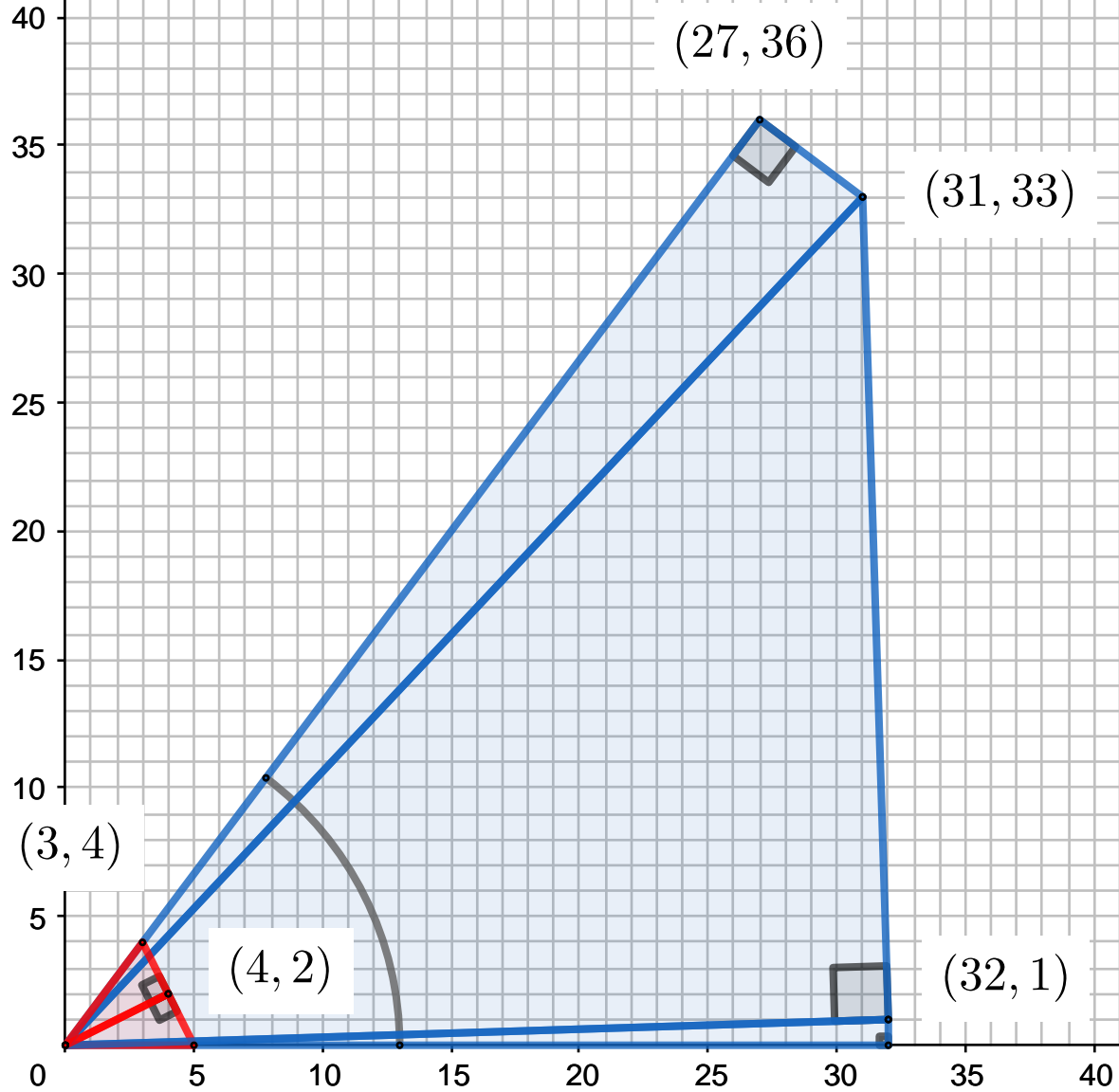
$$\frac{\pi}{4} = 2 \arctan \frac{1}{3} + \arctan \frac{1}{9} + \arctan \frac{1}{32} \quad \text{Stormer}$$



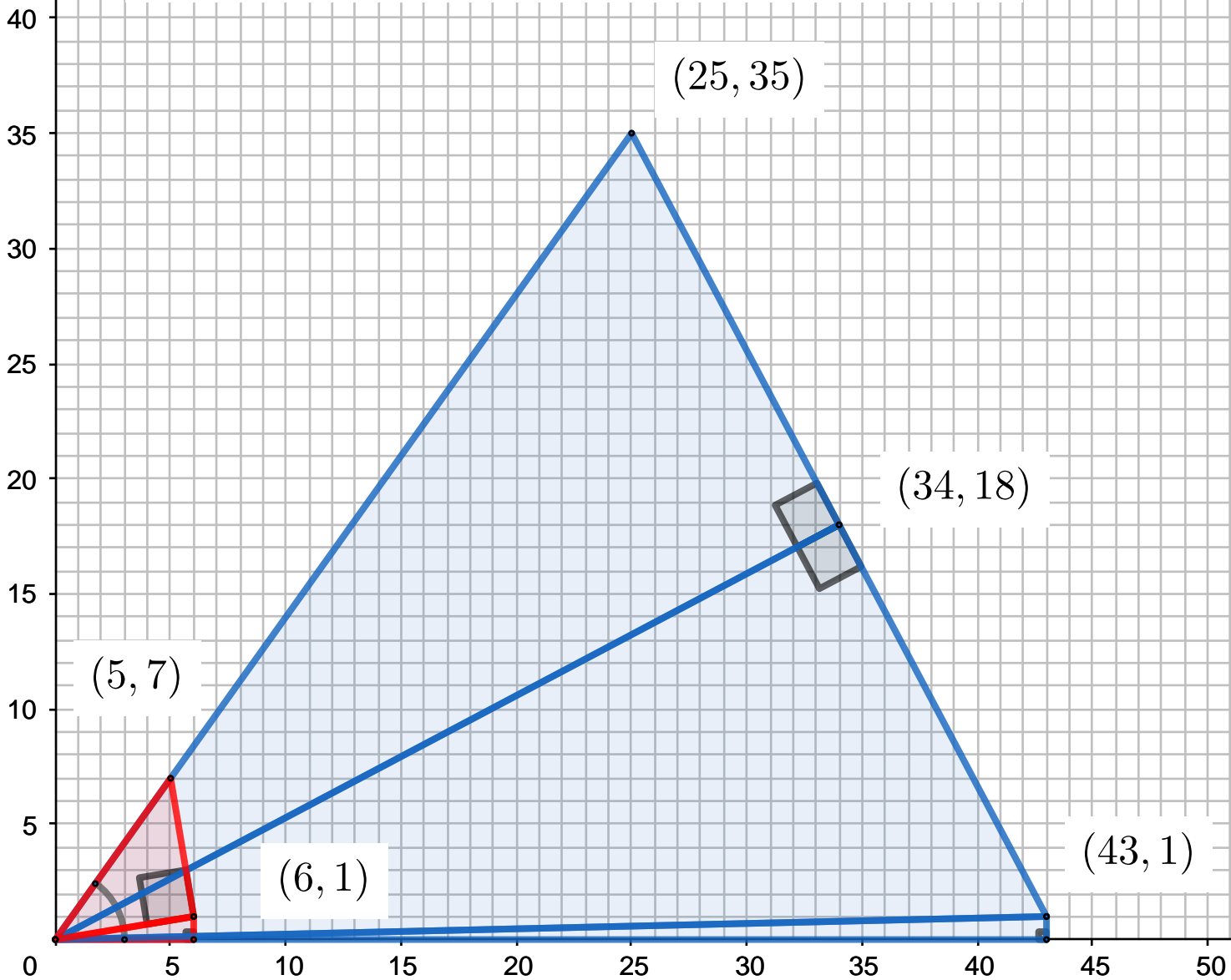
$$\arctan \frac{1}{5} + \frac{\pi}{4} = 2 \arctan \frac{1}{2} + \arctan \frac{1}{18} \quad \text{Stormer}$$



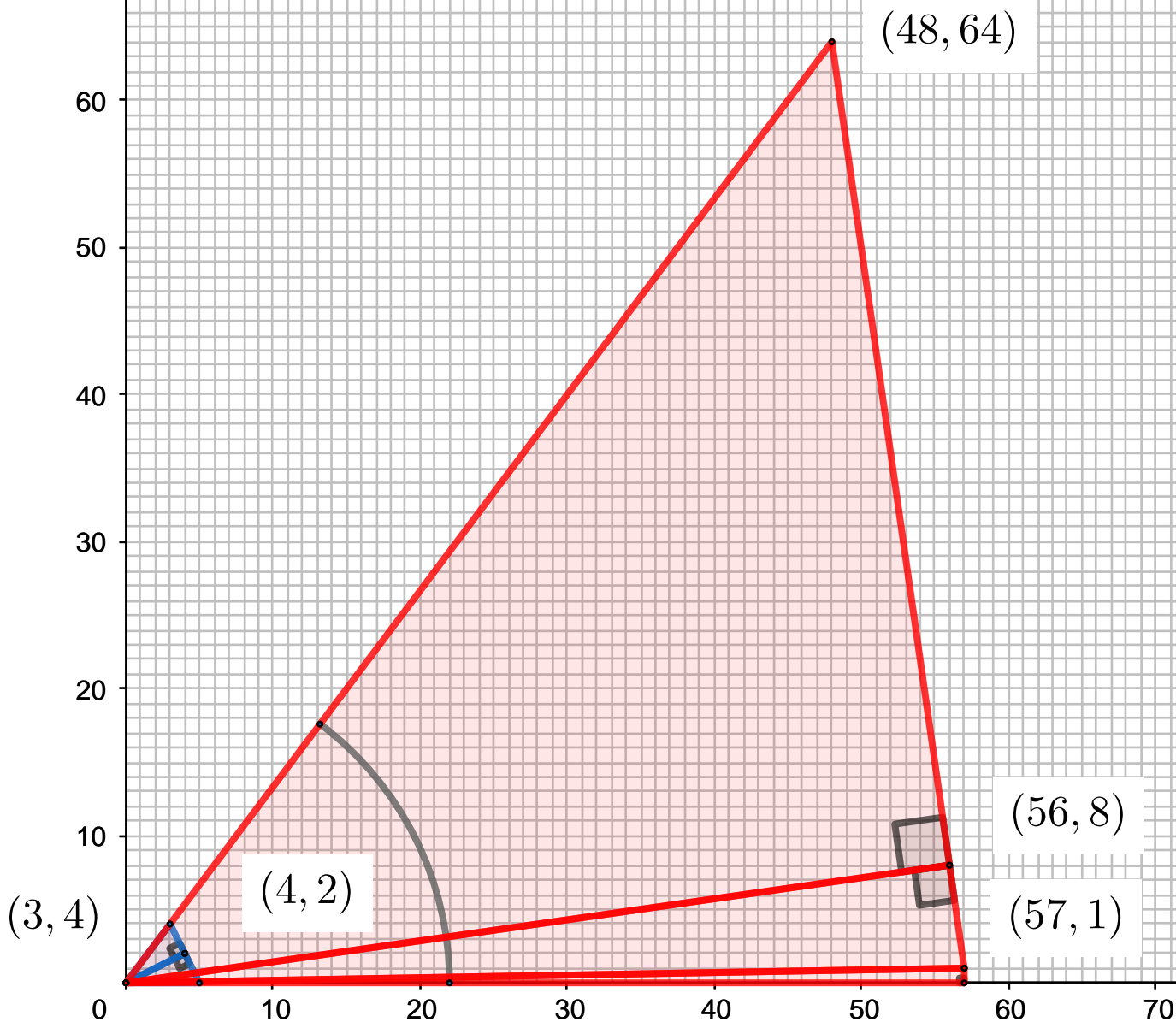
$$\arctan \frac{1}{32} + \frac{\pi}{4} + \arctan \frac{1}{9} = 2 \arctan \frac{1}{2} \quad \text{Stormer}$$



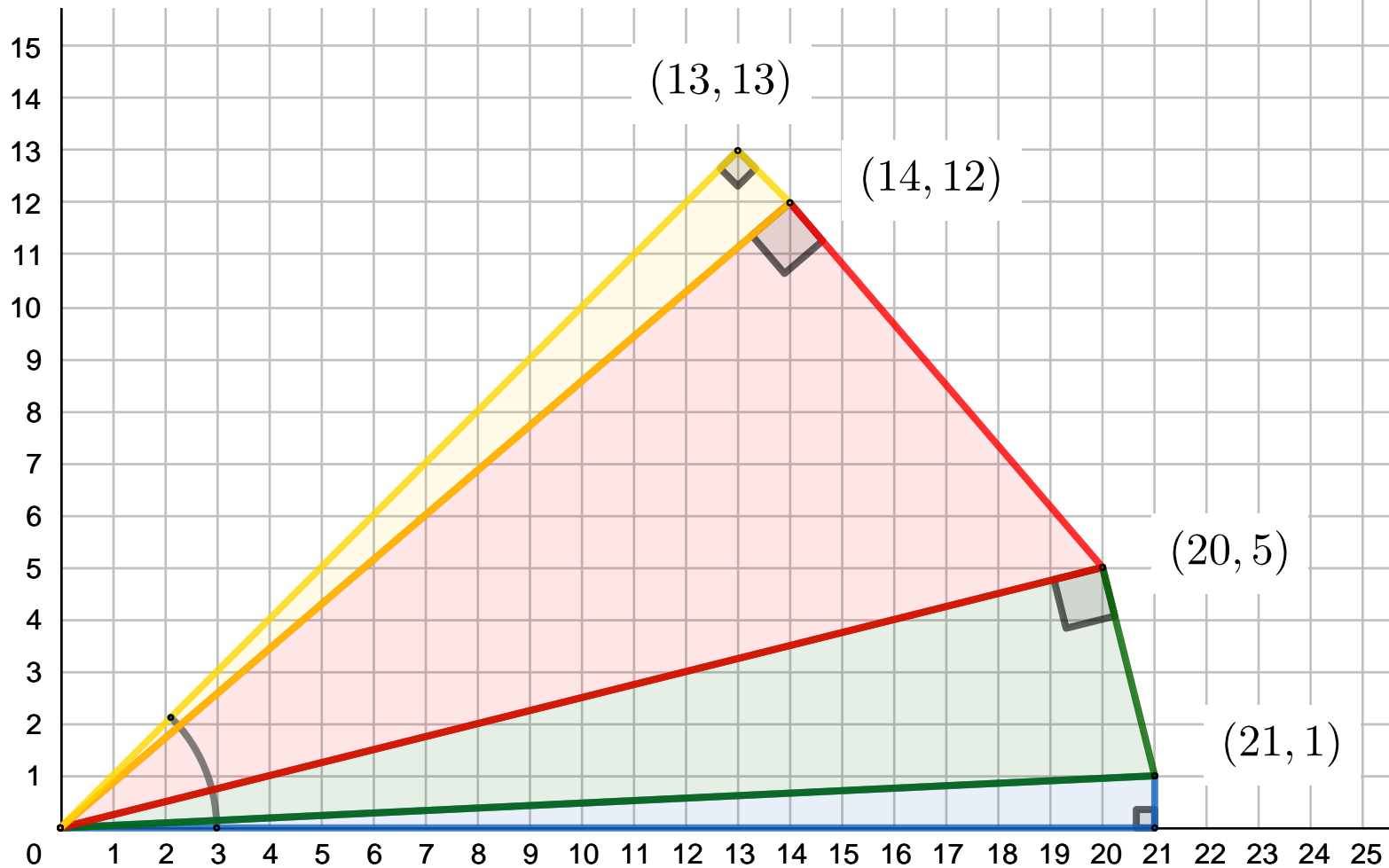
$$\arctan \frac{1}{6} + \frac{\pi}{4} = 2 \arctan \frac{1}{2} + \arctan \frac{1}{43} \quad \text{Stormer}$$



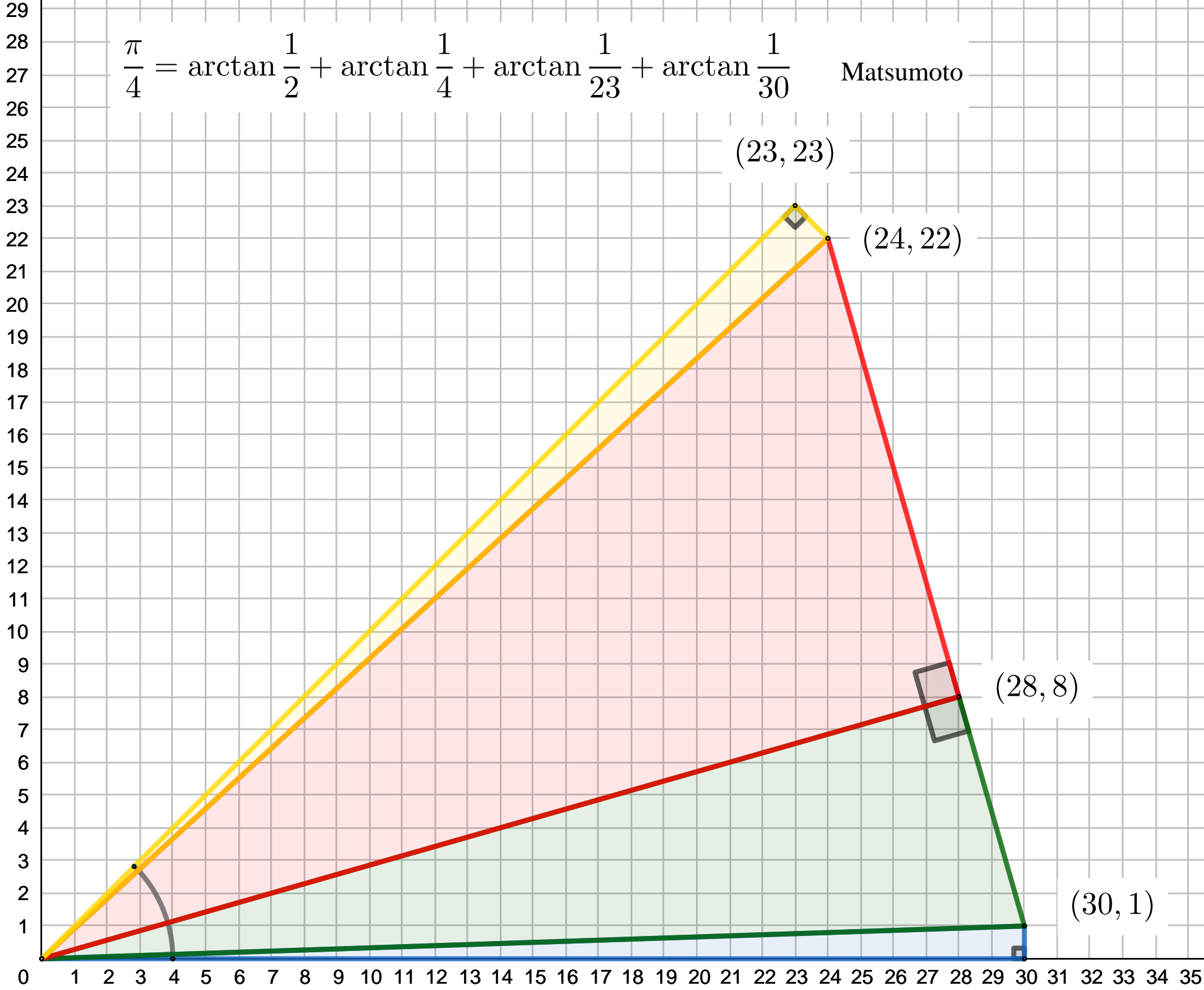
$$\arctan \frac{1}{57} + \arctan \frac{1}{8} + \frac{\pi}{4} = 2 \arctan \frac{1}{2} \quad \text{Stormer}$$



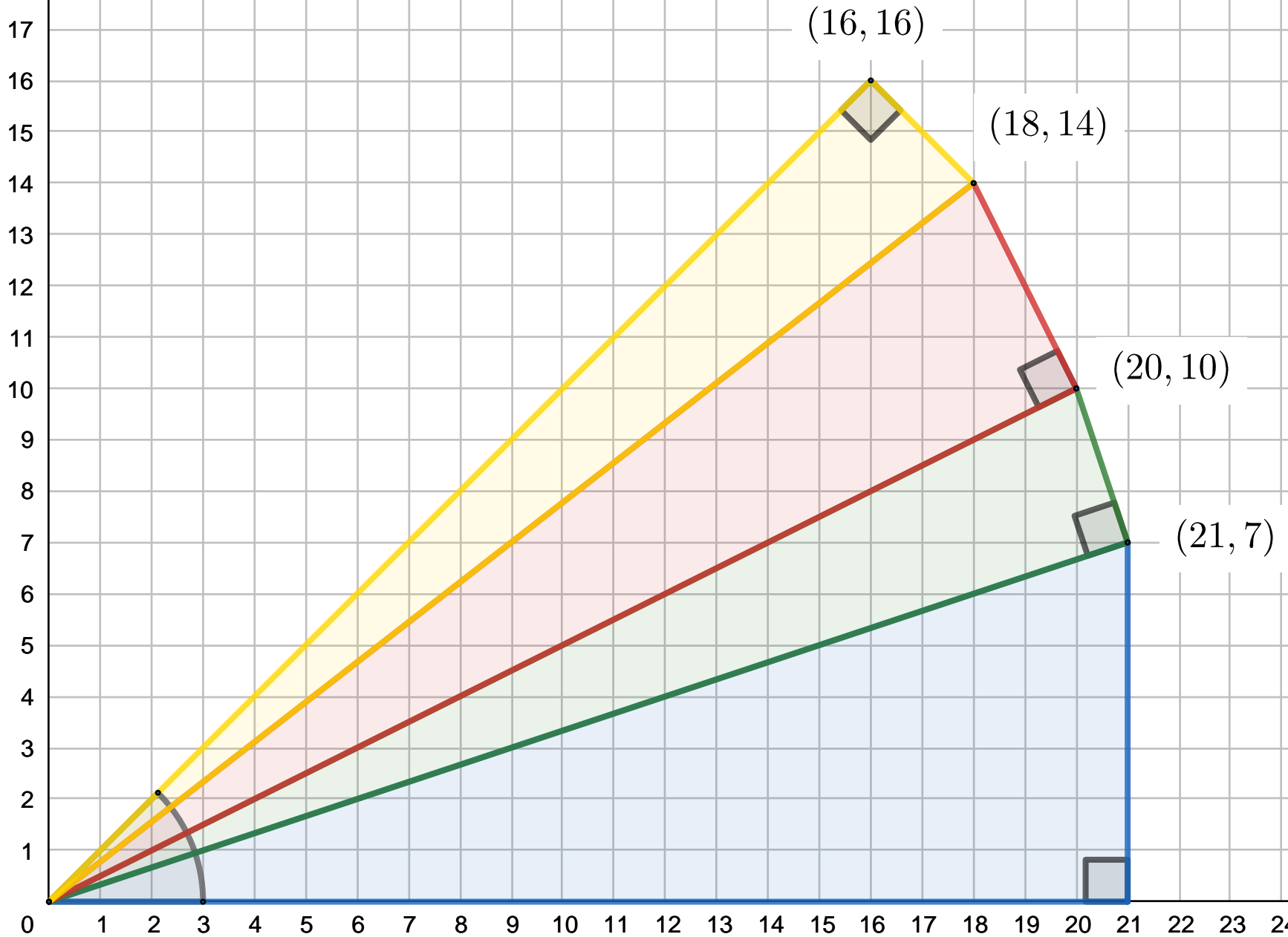
$$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{5} + \arctan \frac{1}{13} + \arctan \frac{1}{21} \quad \text{Matsumoto}$$



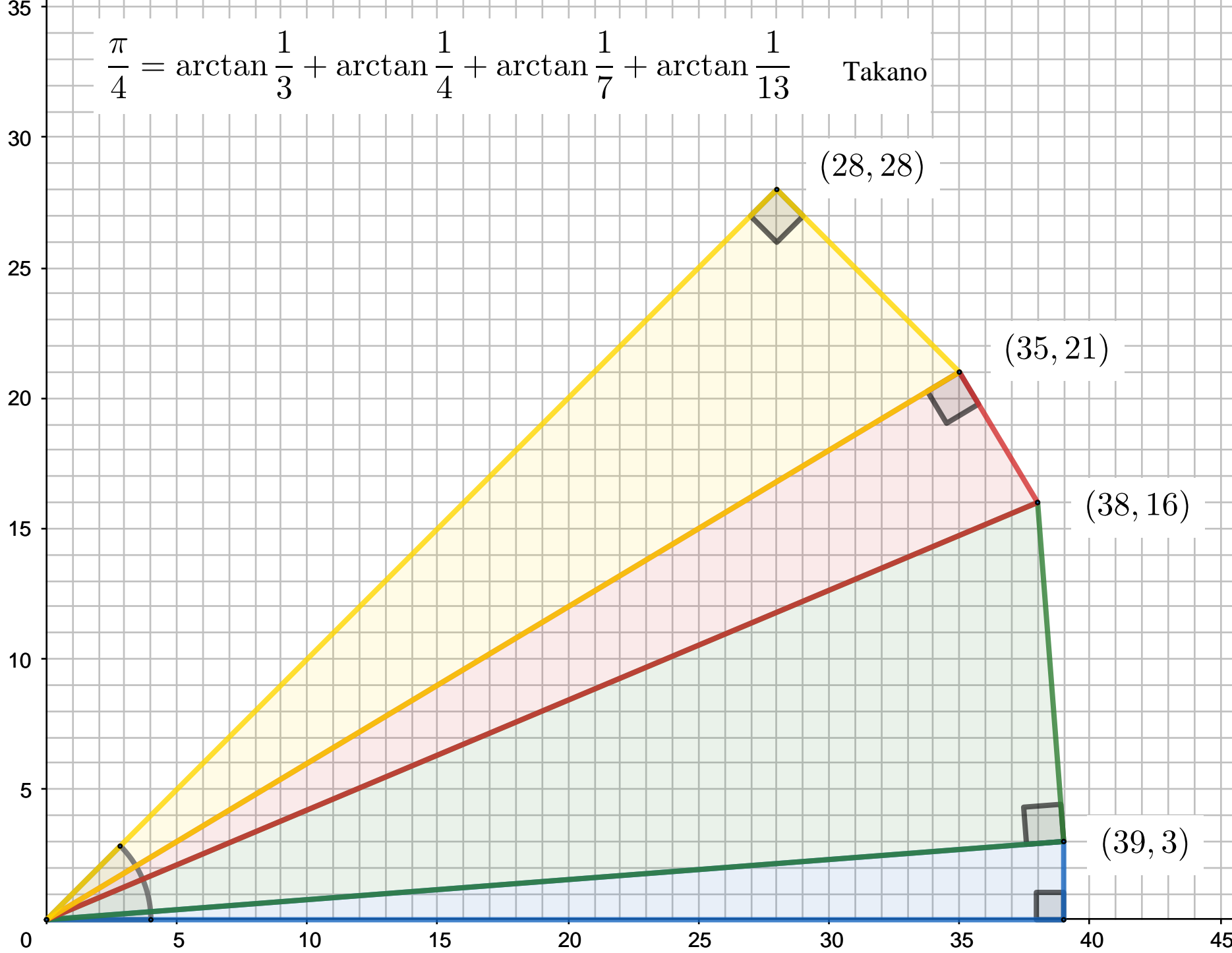
$$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{4} + \arctan \frac{1}{23} + \arctan \frac{1}{30} \quad \text{Matsumoto}$$



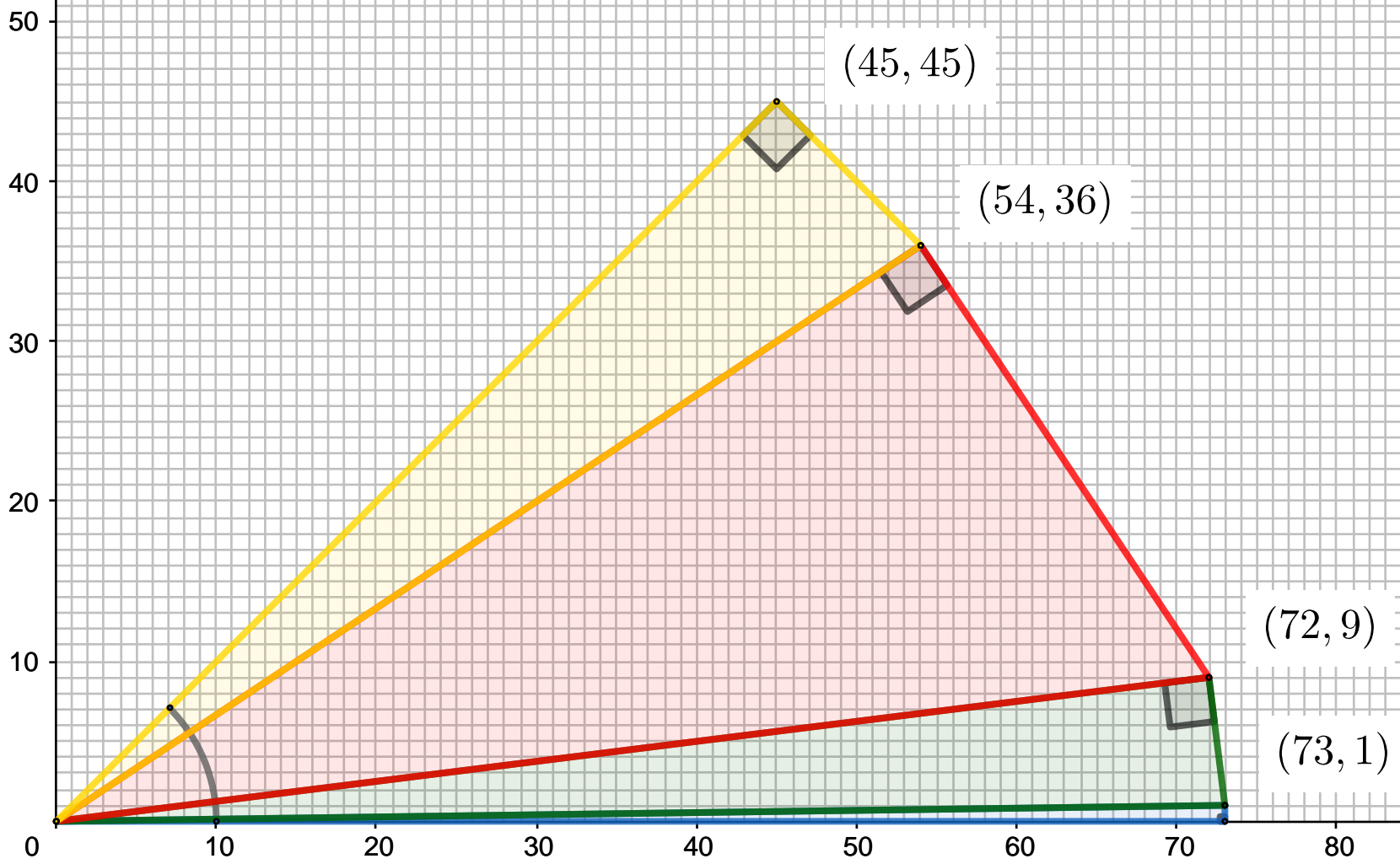
$$\frac{\pi}{4} = \arctan \frac{1}{3} + \arctan \frac{1}{5} + \arctan \frac{1}{7} + \arctan \frac{1}{8} \quad \text{Takano}$$



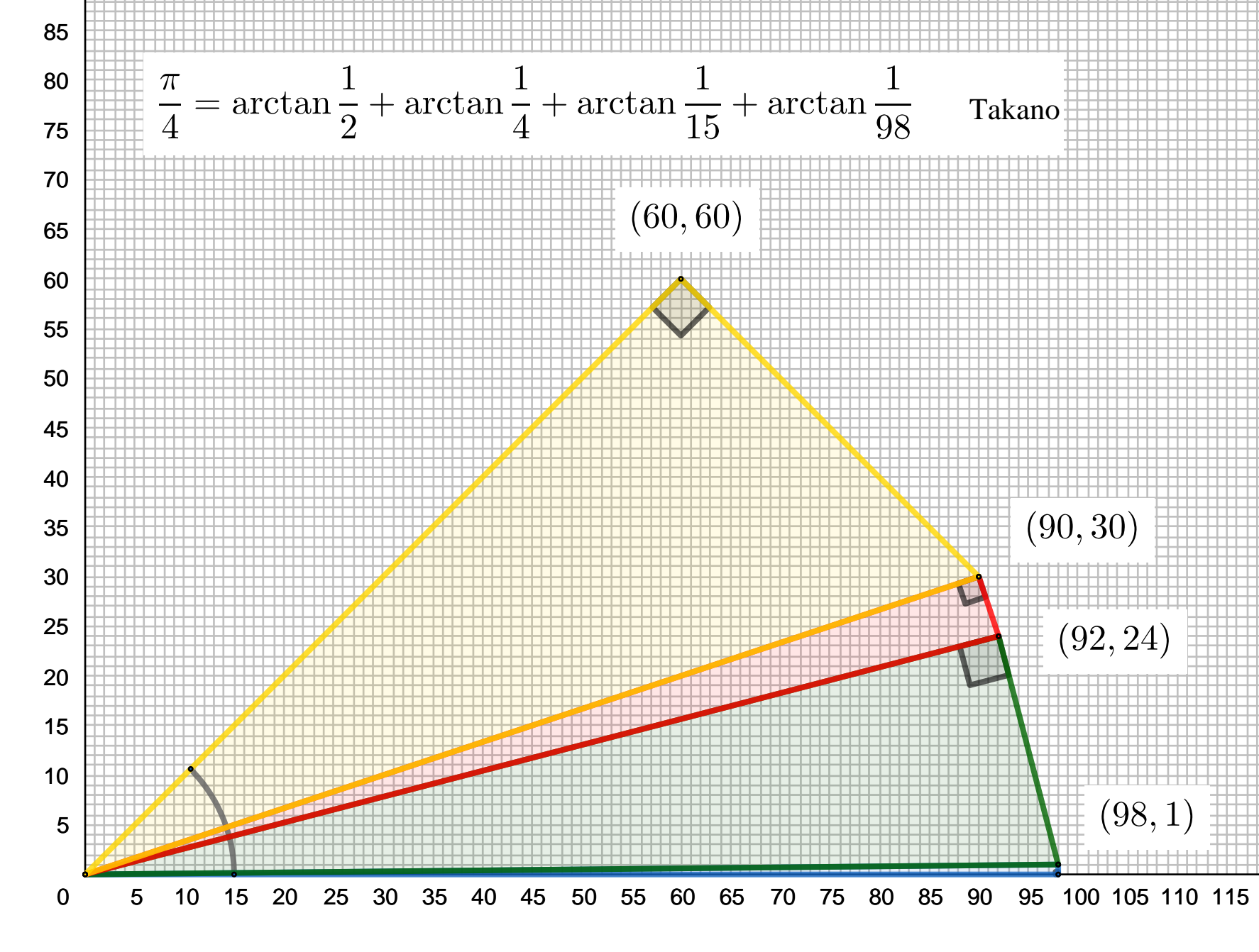
$$\frac{\pi}{4} = \arctan \frac{1}{3} + \arctan \frac{1}{4} + \arctan \frac{1}{7} + \arctan \frac{1}{13} \quad \text{Takano}$$



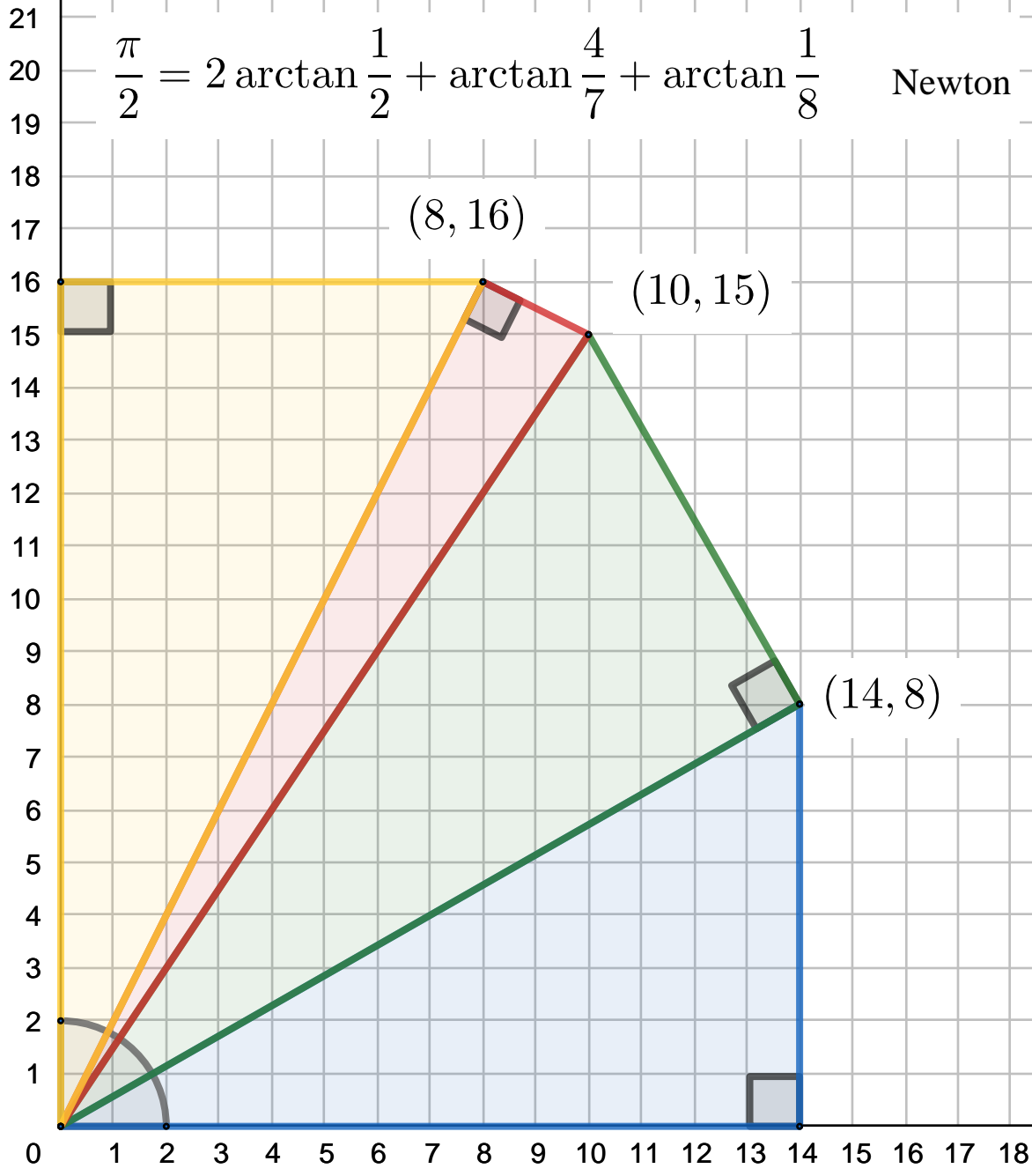
$$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{5} + \arctan \frac{1}{9} + \arctan \frac{1}{73} \quad \text{Takano}$$



$$\frac{\pi}{4} = \arctan \frac{1}{2} + \arctan \frac{1}{4} + \arctan \frac{1}{15} + \arctan \frac{1}{98} \quad \text{Takano}$$

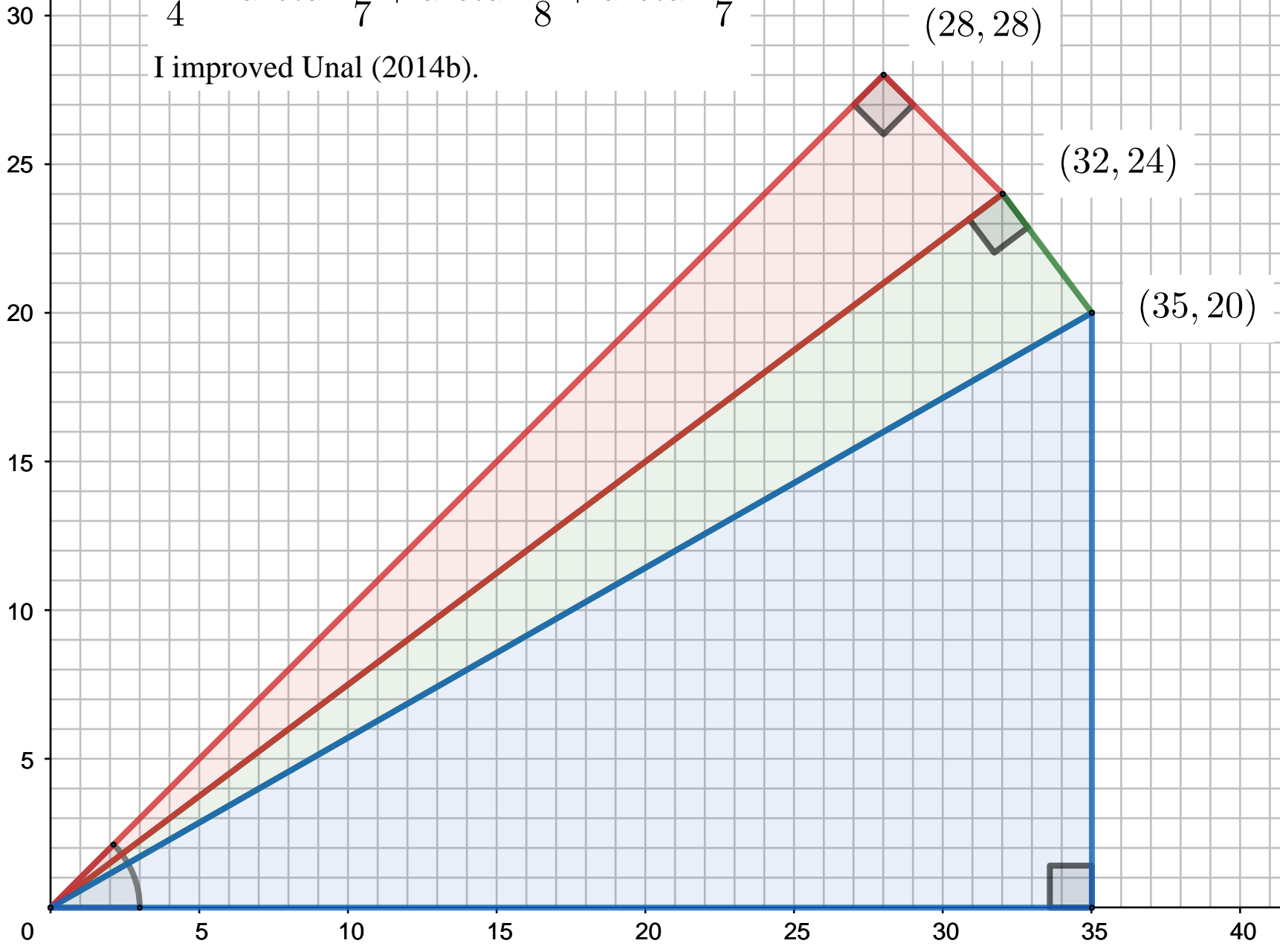


$$\frac{\pi}{2} = 2 \arctan \frac{1}{2} + \arctan \frac{4}{7} + \arctan \frac{1}{8} \quad \text{Newton}$$



$$\frac{\pi}{4} = \arctan \frac{1}{7} + \arctan \frac{1}{8} + \arctan \frac{4}{7}$$

I improved Unal (2014b).



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