

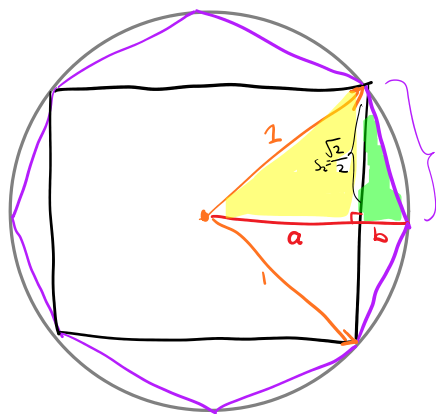
GRADING
EXAMPLE:

Practice: 82% — B
 Projects: 1E, 3 M, 1R — B
 Final: E — A
 Challenge: 1 M — B

}

B+

ARCHIMEDES'S METHOD:



Square: side length $S_2 = \sqrt{2}$
 $\hookrightarrow 2^2\text{-gon}$
 approx: $\pi_2 = \frac{4\sqrt{2}}{2} = 2\sqrt{2} \approx 2.82\dots$

Octagon: find side length
 $a = \sqrt{1^2 - (\frac{\sqrt{2}}{2})^2} = \frac{1}{\sqrt{2}}$
 $b = 1 - a = 1 - \frac{1}{\sqrt{2}}$
 $S_3 = \sqrt{b^2 + (\frac{\sqrt{2}}{2})^2} = \sqrt{(1 - \frac{1}{\sqrt{2}})^2 + (\frac{\sqrt{2}}{2})^2} = \sqrt{2 - \sqrt{2}}$
 approx: $\pi_3 = \frac{8S_3}{2} = 4\sqrt{2 - \sqrt{2}} \approx 3.06\dots$

} doubling method

Repeat...

16-gon: compute side length s_4

mz