



MUSTANG MATH TOURNAMENT 2020

GALLOP ROUND 4

10. An equilateral triangle with vertices $(1 + \sqrt{3}, 0)$, $(1, -1)$, and $(1, 1)$ is rotated about the origin 90° . If the area swept out by the figure can be expressed as $\frac{\pi a + b}{4}$ where a and b real numbers, compute $2a - b$.
11. John and Jim are running a race. John is going at a constant rate, with equation $d = 5t$, where d is distance in feet and t is time in seconds. Meanwhile, Jim accelerates, and can map his time to distance as $d = 0.5 * 2^t$. If John starts 6 seconds before Jim, how long, to the nearest second, will it take Jim to catch up?
12. A bored high schooler with an abundance of stickers (and time) decides to show their generosity by leaving stickers on various students' lockers, which are numbered from 1 to 1000. They place a sticker on every third locker, then go back and place one on every fifth locker, then on every seventh locker, and finally, on every tenth locker. How many lockers have at least three stickers on them?