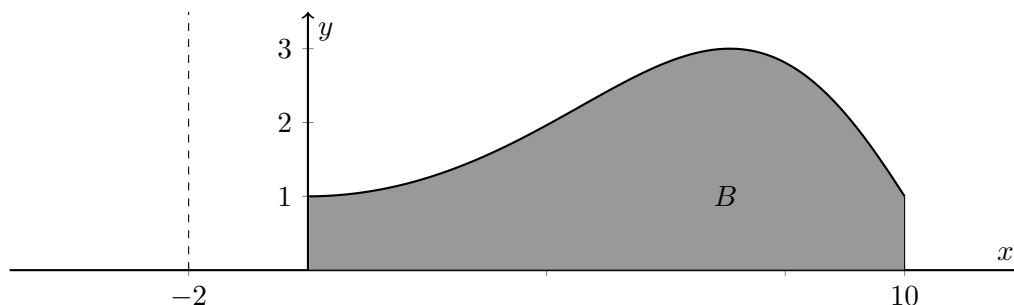


7. [9 points] Consider the region B in the first quadrant, bounded by $x = 10$ and

$$f(x) = 1 + 2 \sin\left(\frac{\pi x^2}{100}\right), \quad 0 \leq x \leq 10$$

as shaded in the diagram below.



- a. [4 points] Pianta designs a beautiful decorative urn by rotating the shaded region B around the x -axis. Write an expression involving one or more integrals for the volume of the urn. Your expression should not involve the letter f . **Do not** evaluate any integrals in your expression.

Answer: _____

- b. [5 points] Pianta also designs a fountain basin for a city plaza by rotating the shaded region B around the line $x = -2$ depicted above. Write an expression involving one or more integrals for the volume of the fountain basin. Your expression should not involve the letter f . **Do not** evaluate any integrals in your expression.

Answer: _____