4. [9 points] As Megan's assortment of mushrooms continues to grow, she starts tracking the growth of various mushrooms. She finds that one mushroom has an erratic growth rate. Its growth rate t days after it blooms is given by the function

$$m(t) = \frac{10\cos(t)}{(\sin^2(t)+1)\,(\sin(t)+2)} + 6 \quad \text{for } 0 \le t \le 5,$$

measured in centimeters per day.
The height of Megan's mushroom 5 days after it blooms is given by the integral

$$\int_0^5 m(t)\,\mathrm{d}t.$$

Evaluate this integral, showing all your work. Give an exact answer and include units. You may use the fact that

$$\frac{1}{(u^2+1)(u+2)} = \frac{2-u}{5\,(u^2+1)} + \frac{1}{5\,(u+2)}.$$

Answer: _____