1. \( \int \sqrt{x} \ln(3x) \, dx \)
2. \[ \int_{\frac{\pi}{6}}^{0} \sec^6 x \, dx \] Exact answer only, no decimal approximation.
3. \[ \int \frac{3x^2}{\sqrt{1 - x^2}} \, dx \] Include a triangle diagram with your solution.
Bonus:

Let \( f \) be a twice differentiable function such that \( f(0) = 5, f(2) = -2, f'(0) = 1, \) and \( f''(2) = 3 \).

Evaluate the integral \( \int_0^2 x f''(x) \, dx \).