0. Find \( \int x^3 \sin 3x \, dx \). (You may use any correct method.)

2. Find the area of the region bounded by the graphs of \( y = x^3 \) and \( y = 10x \).

3. A bug moves in a straight path for 6 minutes, with a speed after \( t \) min, given by \( f(t) = t \sqrt{36 - t^2} \) ft/min. Find the bug’s average speed for its trip.

4. Find the following definite integrals:
   a) \( \int_2^3 \frac{2^x}{x^2} \, dx \)
   b) \( \int_3^6 \frac{9x}{\sqrt{3x - 8}} \, dx \)
   c) \( \int_0^1 \frac{72x}{(2x + 1)^3} \, dx \)

5. Find the volume of the solid obtained by revolving the region bounded by the graphs of \( y = 3x^2 \) and \( y = 6x - 3x^4 \) about the \( x \)-axis.

6. Find the volume of the solid generated by revolving the region bounded by the graphs of \( y = x^2 - 1 \) and \( y = 5 \) around the \( y \)-axis.

7. Find \( \int \ln (t - 4) \, dt \).

8. Find \( \int \frac{3e}{e^{2x} + 5} \, dx \).

9. Find the area of the region bounded by the graphs of \( y = 4 + \ln x \), \( y = 2 \ln(x - 2) \), \( y = 0 \), and \( y = 8 \).

10. Find the area of the region bounded by the ellipse \( \frac{x^2}{25} + \frac{y^2}{16} = 1 \).