1. \( \tan(\arccos \frac{1}{10}) = \)

2. \( \int (2 \sin x + 3 \cos x)^2 \, dx = \)

3. \( \int \frac{x^2 + x}{\sqrt{x - 2}} \, dx \)

4. Find the area bounded by the curve \( y = (x^2 + 16)^{-3/2} \) and the \( x \)-axis.

5. \( \int \frac{x^3 \, dx}{\sqrt{9 + x^2}} \)
6. Find the area bounded by the curve \( r = 2 \cos \theta \)

7. Calculate \( \sqrt{17} \) using 2 terms of a power series.

8. Find \( \int_{0.1}^{0.2} \frac{\cos x}{\sqrt{x}} \, dx \) using 3 terms of a power series.

9. Find the Taylor series of the function \( \sin 2x \) about \( a = \pi \).

10. Find the Fourier series of the function \( f(x) = \begin{cases} 0 & -\pi \leq x \leq 0 \\ x^2 & 0 \leq x \leq \pi \end{cases} \).