TECHNICAL CALCULUS
Final Exam
Spring 1994

1. $tg(\arccos \frac{1}{10}) =$

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 $\displaystyle\int_{0.1}^{0.2} \frac{\cos x}{\sqrt{x}}\, dx$ 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 $f(x) = \begin{cases} 0 & -\pi \le x \le 0 \\ x^2 & 0 \le x \le \pi \end{cases}$.