

1. Evaluate  $\int (x + 4) \cosh(4x) dx$
2. Evaluate  $\int \frac{dx}{\sqrt{4x^2 - 25}}$
3. Does  $\int_{-\infty}^{\infty} \cos(x) dx$  converge or diverge?
4. Evaluate  $\int \frac{-19x^2 + 50x - 25}{x^2(3x - 5)} dx$
5. Find the values of  $\theta$  on  $r = 2 + 2 \cos(\theta)$  where a vertical tangent exists.
6. Evaluate  $\int x \cos(x^2) dx$  using a Maclaurin series you know.
7. Does  $\int_{-\infty}^{\infty} \frac{1}{x^2 + 4} dx$  converge or diverge?
8. Find a Maclaurin series for  $f(x) = 2^x$

## ANSWERS

- 1)  $\frac{1}{4}(x + 4) \sinh(4x) - \frac{1}{16} \cosh(4x) + C$
- 2)  $\frac{1}{2} \ln \left| \frac{2x}{5} + \frac{\sqrt{4x^2 - 25}}{5} \right| + C$
- 3) Diverges
- 4)  $-7 \ln |x| - \frac{5}{x} + \frac{2}{3} \ln |3x - 5| + C$
- 5)  $0, \frac{2\pi}{3}, \frac{4\pi}{3}$
- 6)  $\sum_{n=0}^{\infty} \frac{(-1)^n x^{4n+2}}{(4n+2)(2n)!} + C$
- 7) Converges to  $\frac{\pi}{2}$
- 8)  $\sum_{n=1}^{\infty} \frac{(\ln 2)^n x^n}{n!}$