

- ① FIND THE POINT WHERE THE LINE WITH SYMMETRIC FORM  $\frac{x+1}{2} = \frac{y-3}{-1} = \frac{z+2}{4}$  INTERSECTS THE PLANE  $3x - 2y + z = 12$ .
- ② FIND AN EQUATION OF THE PLANE CONTAINING THE POINT  $P(4, 6, -3)$  AND THE LINE GIVEN BY  $x = 2 + 5t$ ,  $y = 5 - 4t$ ,  $z = 1 + 2t$ .
- ③ USE THE BINOMIAL SERIES TO FIND THE MACLAURIN SERIES FOR  $f(x) = (1+x^2)^{-3}$ . (WRITE YOUR ANSWER IN SUMMATION NOTATION.)
- ④ FIND THE FIRST 3 NONZERO TERMS IN THE MACLAURIN SERIES FOR  $f(x) = e^{x^2} \sin 2x$ , AND SIMPLIFY THE COEFFICIENTS.
- ⑤ A) USE TAYLOR'S REMAINDER TH. TO SHOW THAT  $\ln(1+x)$  IS REPRESENTED BY ITS MACLAURIN SERIES WHEN  $x=1$ .  
 B) USE PART A) TO FIND THE SUM OF THE ALTERNATING HARMONIC SERIES  $\sum_{n=1}^{\infty} (-1)^{n+1} \frac{1}{n}$ .
- ⑥ USE A GEOMETRIC SERIES TO FIND THE MACLAURIN SERIES FOR  $f(x) = \frac{x^4}{x^3+5}$ . (WRITE YOUR ANSWER IN SUMMATION NOTATION.)
- ⑦ A) FIND A FUNCTION WITH MACLAURIN SERIES GIVEN BY  $\sum_{n=1}^{\infty} n x^{n-1}$ .  
 B) USE PART A) TO FIND THE SUM OF THE CONVERGENT SERIES  $\sum_{n=1}^{\infty} (-1)^{n+1} \frac{n}{2^n}$ .
- ⑧ SKETCH THE DOMAIN OF THE FUNCTION  $f(x,y) = \frac{\sqrt{x^2+y^2-1}}{\ln(9-x^2-y^2)}$ .