

Explain *geometrically* why each of the following line integrals evaluates to zero.

1.  $\int_C e^{\arctan(x^4)} y^3 \cos(2y) ds$ , where  $C$  is the straight line segment from  $(10, 15)$  to  $(10, -15)$ .
2.  $\oint_C \frac{x}{x^2+y^2+1} dx + \frac{y}{x^2+y^2+1} dy$ , where  $C$  is the unit circle oriented counterclockwise.
3.  $\int_C -e^{xy} y dx + e^{xy} x dy$ , where  $C$  is segment of a line passing through the origin.

For the rest of the review, we will suggest problems from the Chapter Reviews in your textbook.

From Chapter 12 (on page 911):

- 23-28
- 29-34 (Can you do these as double and/or triple integrals?)
- 38, 39, 40 (set up), 42, 44 (set up)
- 47, 48
- 50

From Chapter 13 (on page 987):

- 1(a)
- 2-10