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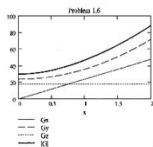
My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler



so many fake sites. this is the first one which worked! Many thanks

1.A. For the  $G$  field in Problem 1.5, make sketches of  $G_x$ ,  $G_y$ ,  $G_z$  and  $|G|$  along the line  $y = 1$ ,  $z = 1$ , for  $0 \leq x \leq 2$ . We find  $G_x(1, 1) = (24x^2 - 12x^2 + 24, 18)$ , from which  $G_x = 24x^2$ ,  $G_y = 12x^2 + 24$ ,  $G_z = 18$ , and  $|G| = \sqrt{4x^4 + 12x^2 + 23}$ . These are shown below.



1.7. Given the vector field  $E = 4x^2 \cos 2\alpha_x + 2xy \sin 2\alpha_x + y^2 \sin 2\alpha_x$ , for the region  $|x| \leq 1$ , and  $|y| \leq 2$ , find:

- a) the surface on which  $E_x = 0$ . With  $E_x = 4x^2 \cos 2\alpha = 0$ , the surface are 1) the plane  $x = 0$ , with  $|y| \leq 2$ ,  $|z| \leq 2$ ; 2) the plane  $x = 0$ , with  $|x| < 2$ ,  $|z| \leq 2$ ; 3) the plane  $x = 0$ , with  $|x| < 2$ ,  $|z| \leq 2$ .
- b) the region in which  $E_x = E_y$ . This occurs when  $2xy \sin 2\alpha = y^2 \sin 2\alpha$ , or on the plane  $2x = y$ , with  $|x| \leq 2$ ,  $|y| \leq 2$ ,  $|z| \leq 2$ .
- c) the region in which  $E = 0$ . We would have  $E_x = E_y = E_z = 0$ , or  $x^2 \cos 2\alpha = 2xy \sin 2\alpha = y^2 \sin 2\alpha = 0$ . This condition is met on the plane  $x = 0$ , with  $|x| \leq 2$ ,  $|z| \leq 2$ .

1.8. Two vector fields are  $F = -10x + 20y(-1)a_x$ , and  $G = 2x^2y a_x - 4xy z a_y$ . For the point  $P(2, 3, -4)$ , find:

- a)  $F$ :  $F$  at  $(2, 3, -4) = (-10, 60, 0)$ , so  $|F| = 80.6$ .
- b)  $G$ :  $G$  at  $(2, 3, -4) = (24, -4, -4)$ , so  $|G| = 24.7$ .
- c) a unit vector in the direction of  $F + G$ :  $F + G = (-10, 80, 0) - (24, -4, -4) = (-34, 84, 4)$ . So  $a = \frac{F+G}{|F+G|} = \frac{(-34, 84, 4)}{90.7} = 1.0037, 0.92, 0.04$ .
- d) a unit vector in the direction of  $F + G$ :  $F + G = (-30, 80, 0) + (24, -4, -4) = (-4, 76, -4)$ . So  $a = \frac{F+G}{|F+G|} = \frac{(-4, 76, -4)}{77.4} = 0.18, 0.98, -0.05$ .

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