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HW5 M282 S08 (377770)

About this Assignment

Due: **Mon May 5 2008 08:00 PDT**

1. SCalcET5 15.9.002. [295293] [Show Details](#)

Find the Jacobian of the transformation.

$$x = u^2 - v^2$$

$$y = u^2 + v^2$$

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2. SCalcET5 15.9.006. [295285] [Show Details](#)

Find the Jacobian of the transformation.

$$x = e^{u-v}$$

$$y = e^{u+v}$$

$$z = e^{u+v+w}$$

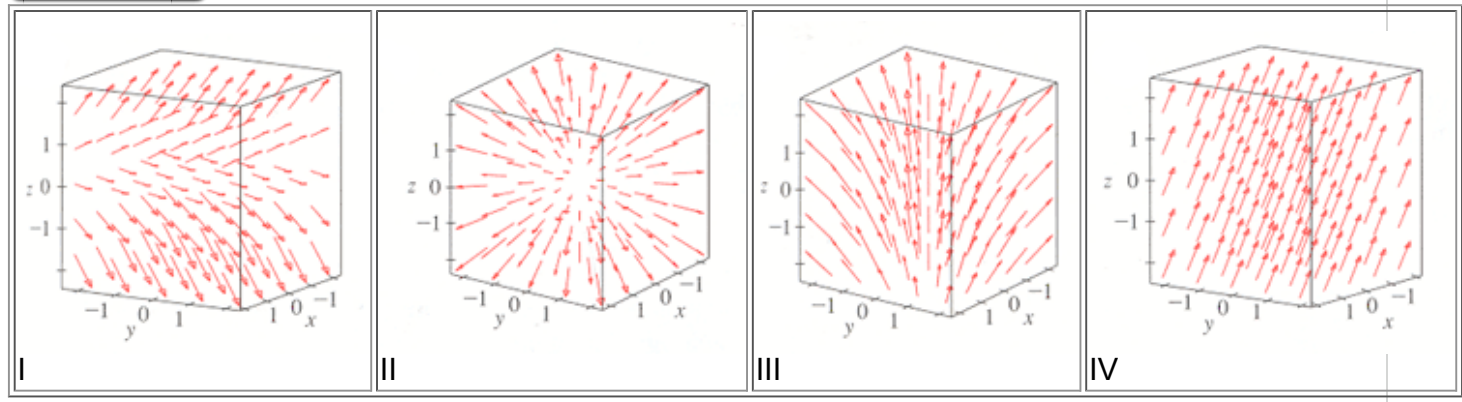
[symbolic formatting help](#)

3. SCalcET5 16.1.016. [349664] [Show Details](#)

Match the vector field F on \mathbb{R}^3 with the plots labeled I-IV.

$$F(x,y,z) = i + 2j + zk$$

---Select---

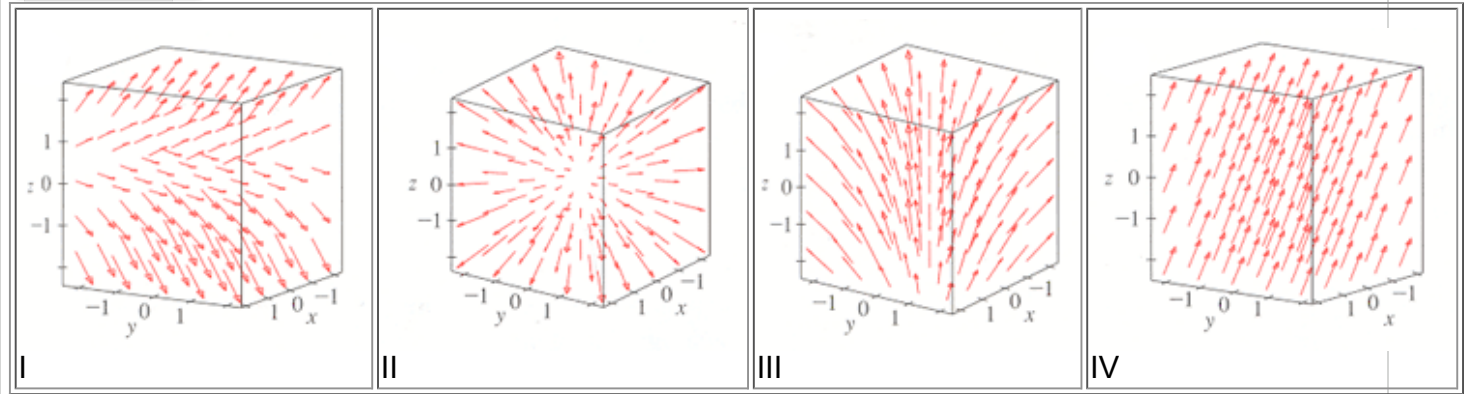


4. SCalcET5 16.1.018. [349670] [Show Details](#)

Match the vector field \mathbf{F} on \mathbb{R}^3 with the plots labeled I-IV.

$$\mathbf{F}(x,y,z) = x\mathbf{i} + y\mathbf{j} + z\mathbf{k}$$

---Select---



5. SCalcET5 16.1.022. [349689] [Show Details](#)

Find the gradient vector field of f .

$$f(x,y) = x^a e^{-bx}$$

\mathbf{i} + \mathbf{j}

[+ symbolic formatting help](#)

6. SCalcET5 16.1.024. [349721] [Show Details](#)

Find the gradient vector field of f .

$$f(x,y,z) = x \cos\left(\frac{y}{z}\right)$$

\mathbf{i} + \mathbf{j} + \mathbf{k}

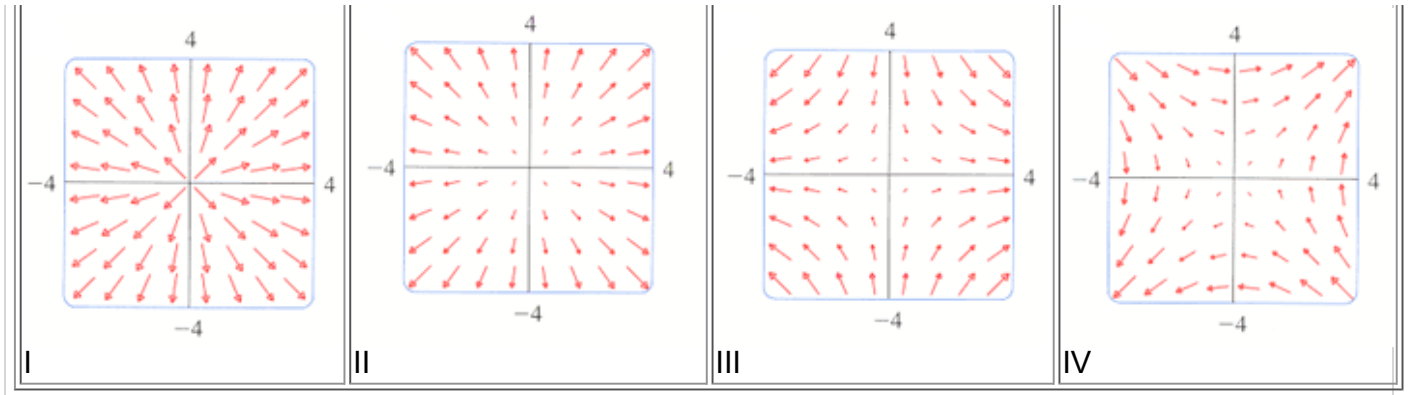
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7. SCalcET5 16.1.030. [349683] [Show Details](#)

Match the functions f with the plots of their gradient vector fields.

$$f(x,y) = x^2 - y^2$$

---Select---

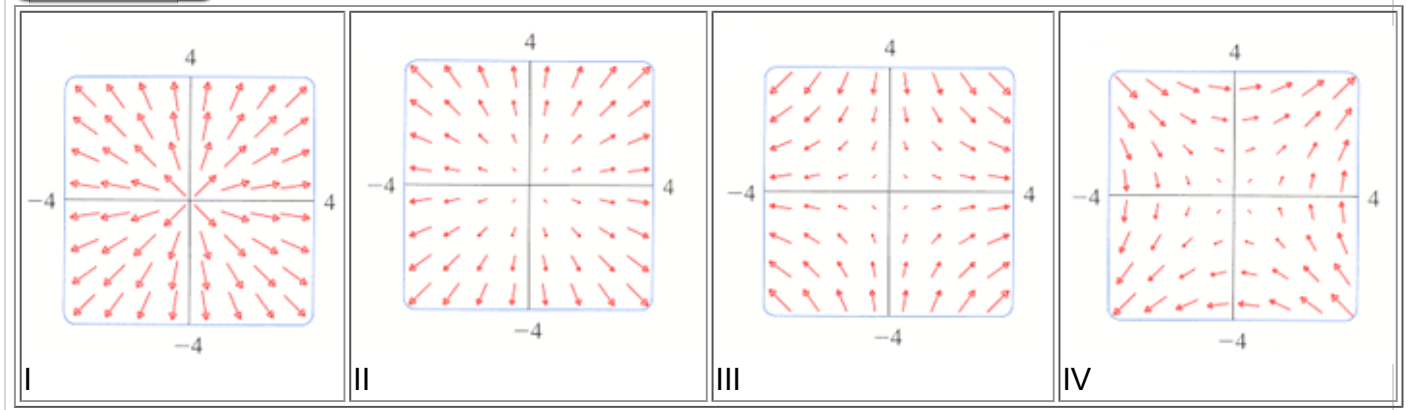


8. SCalcET5 16.1.032. [349628] [Show Details](#)

Match the functions f with the plots of their gradient vector fields.

$$f(x, y) = \sqrt{x^2 + y^2}$$

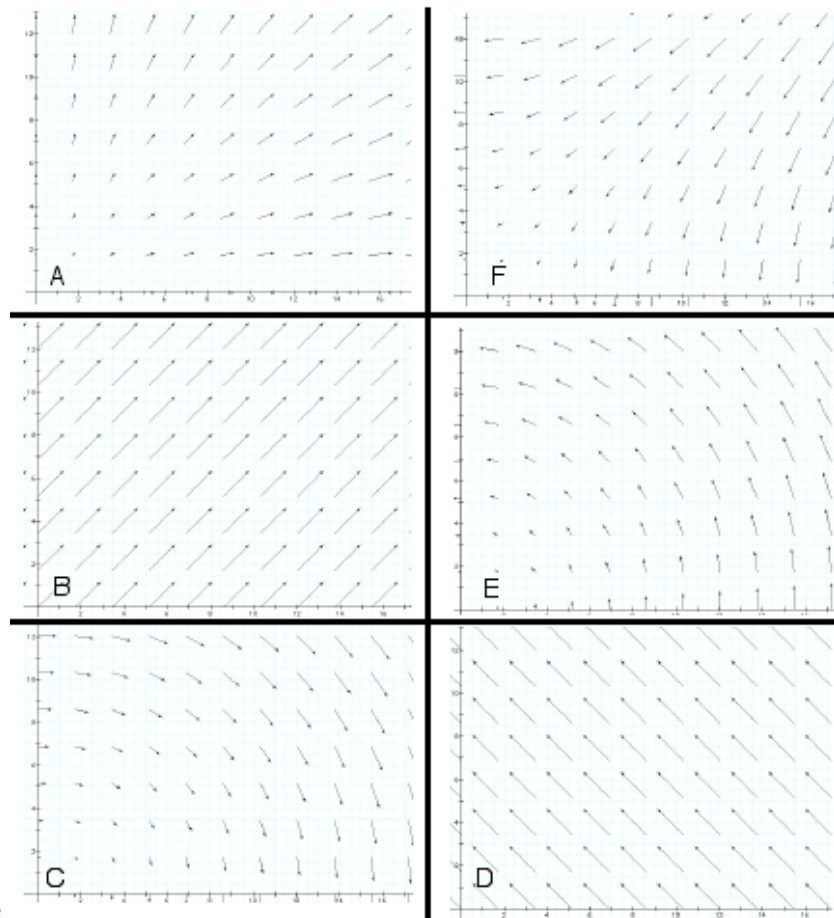
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9. HW5.1 [540867] [Show Details](#)

Puffin has been fooling around with graphing calculator. Please match the graphs to the vector fields by writing the number of the vector field next to each graph. The vector fields are:

1. $\xi_1(x, y) = (y, -x)$
2. $\xi_2(x, y) = (1, 1)$
3. $\xi_3(x, y) = (x, y)$
4. $\xi_4(x, y) = (-y, -x)$
5. $\xi_5(x, y) = (-1, 1)$
6. $\xi_6(x, y) = (-y, x)$



and the associated graphs are enter the answer:

Please

- A
- B
- C
- D
- E
- F



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10. HW5.2 [540872] [Show Details](#)

Let **E** be the ellipse $x^2 + 4xy + 11y^2 \leq 25$ Find the area of **E**



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(A numerical answer xx.x is desired)

11. HW5.3 [540873] [Show Details](#)

Let E be the ellipse $x^2 + 4xy + 11y^2 \leq 25$ Assume the mass density is $\rho(x, y) = y^2$ Find the total mass of the ellipse



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(A numerical answer xx.x is desired)

12. HW5.4 [540874] [Show Details](#)

Let E be the ellipsoid $x^2 + 2xy + 5y^2 + 4z^2 \leq 1$ Find the volume of E .



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(A numerical answer xx.x is desired)

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