MATH 213 – QUIZ 6 – 6 MARCH 2012

Answer the following question in the space provided. There is no need to justify your answers. This quiz is worth 5 points.

1. A typical level curve of the function $f(x,y) = (2x + y^2)^{1/2}$ is a(n) (circle one)

parabola ellipse hyperbola

2. The surface given by the equation $x^2 + y^2 - z^2 = 1$ is a (circle one)

hyperbolic paraboloid hyperboloid of one sheet hyperboloid of two sheets

3. Traces of the surface $z^2 + 4y^2 - x^2 = 1$ in planes parallel to the $x - y$ plane are (circle one)

parabolas ellipses hyperbolas

4. The plane given by the equation $2x + 3y = 5 + z$ (circle one)

is parallel to the y–axis contains the origin contains the line $\mathbf{r}(t) = \langle 1, 2, 3\rangle + t\langle 3, 1, 0\rangle$

5. The graph of the function $f(x,y) = 2x^2 - 3y^2$ is a (circle one)

paraboloid hemisphere (i.e., half a sphere) hyperbolic paraboloid

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Answer the following question in the space provided. There is no need to justify your answers. This quiz is worth 5 points.

1. A level curve of the function $f(x,y) = (2x^2 + y^2 + 1)^{1/2}$ can be a (circle one).

parabola ellipse hyperbola

2. The surface given by the equation $2x^2 + y^2 + 1 = z^2$ is a (circle one).

hyperbolic paraboloid hyperboloid of one sheet hyperboloid of two sheets

3. Traces of the surface $x - 2z^2 = 0$ in planes parallel to the $y - z$ plane are (circle one)

parabolas lines hyperbolas

4. An equation of the plane containing the points $(1,1,-1)$, $(0,2,1)$, and $(1,0,0)$ is (circle one) (Hint: This problem is easier than it looks. Don't do any unnecessary work.)

$x + y + z = 1$ $-x + y - z = 1$ $3x + y + z = 3$

5. The graph of the function $f(x,y) = (1 - x^2 - y^2)^{1/2}$ is a (circle one)

paraboloid hemisphere (i.e., half a sphere) hyperbolic paraboloid

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Answer the following question in the space provided. There is no need to justify your answers. This quiz is worth 5 points.

1. A typical level curve of the function $f(x,y) = \dfrac{x^2}{16} - y^2$ is a(n) (circle one)

parabola ellipse hyperbola

2. The surface given by the equation $6y + \dfrac{x^2}{6} - \dfrac{z^2}{24} = 0$ is a (circle one)

hyperbolic paraboloid hyperboloid of one sheet hyperboloid of two sheets

3. Traces of the surface $z^2 + 4y^2 - x^2 = 1$ in planes parallel to the $y - z$ plane are (circle one)

parabolas ellipses hyperbolas

4. The cylinder given by the equation $x - 2z^2 = 0$ is parallel to the (circle one)

x–axis y–axis z–axis

5. The graph of the function $f(x,y) = 2x^2 + 3y^2$ is a (circle one)

paraboloid hemisphere (i.e., half a sphere) hyperbolic paraboloid