

Math 21D
Vogler
Discussion Sheet 1

1.) Graph each of the following equations in two-dimensional space.

a.) $y = 3$ b.) $x = -2$ c.) $y = x$ d.) $y = 3 - x$ e.) $y = x^3$
 f.) $y = e^x$ g.) $y = \ln x$ h.) $y = \sqrt{x}$ i.) $x = y^2$ j.) $y = \frac{1}{x}$

3.) Sketch all three coordinate plane traces (i.e., $x = 0$, $y = 0$, and $z = 0$) for each of the following equations (surfaces).

a.) $x + 2y + 3z = 6$ b.) $z = x^2 + y^2$ c.) $z = y^2 - x^2$ d.) $z^2 = x^2 + y^2$

4.) Sketch in three-dimensional space each of the following equations (surfaces). Use traces and/or level curves if necessary.

a.) $y = 3$ b.) $x = -2$ c.) $y = x$ d.) $y = 3 - x$ e.) $y = x^3$
 f.) $y = e^x$ g.) $y = \ln x$ h.) $y = \sqrt{x}$ i.) $x = y^2$ j.) $y = \frac{1}{x}$
 k.) $x^2 + y^2 + z^2 = 4$ l.) $x + 2y + 3z = 6$ m.) $z = x^2 + y^2$ n.) $z^2 = x^2 + y^2$
 o.) $z^2 = x^2 + y^2 - 1$ p.) $z^2 = x^2 + y^2 + 1$ q.) $z = y^2 - x^2$

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The following problem is for recreational purposes only.

10.) Two bicyclists are twelve miles apart. They begin riding toward each other, one pedaling at 4 mph and the other at 2 mph. At the same time a bumblebee begins flying back and forth between the riders at a constant speed of 10 mph. What is the total distance the bumblebee travels by the time the riders meet ?