

Math 126 C - Spring 2008
Mid-Term Exam Number Two
May 22, 2008
Answers

1. The plane is $-2x + 7y - 6z + 5 = 0$.
2. (a) The point $(21, 12, 33)$ lies on both lines.
(b) If $a = \frac{15}{2}$, the line will not intersect the plane.
3. (a) The point is the one given by $t = \frac{1}{4}$, i.e. $(\frac{1}{4}, \frac{63}{16}, -\ln 4)$.
(b) The line is $x = \frac{1}{4} + t, y = \frac{63}{16} - \frac{1}{2}t, z = -\ln 4 + 4t$.
4. The times are $t = \pm 9^{1/10}$.
5. The surface has two critical points, $(-\frac{1}{2}, 1)$, and $(\frac{1}{2}, -1)$. They are both saddle points.
6. The curve has two points of maximum curvature:

$$\left(\left(\frac{1}{45} \right)^{\frac{1}{4}}, \left(\frac{1}{45} \right)^{\frac{3}{4}} \right) \text{ and } \left(- \left(\frac{1}{45} \right)^{\frac{1}{4}}, - \left(\frac{1}{45} \right)^{\frac{3}{4}} \right)$$