Mat 1110 2016

13.

$$-9x^2-36x+4y^2-32y-8=0$$

$-9x^2-36x+c=0$

$-9(x+2)^2=0$

$-9(x^2+4x+4)$

$-9x^2+36x-36$

$4(y-\frac{32}{2\cdot 4})^2$

$4(y-4)^2$

$4(y^2-8x+16)$

$4y^2-32x+64$

$(ax+\frac{b}{2})^2$

$a(x-\frac{c}{2a})^2$

$\Rightarrow (-9x^2+36x-36)+36+(4y^2-32+64)-64-8=0$

$(-9(x+2)^2-36+(4(y-4)^2-64-8=0$

$\Rightarrow -9(x+2)^2+4(y-4)^2=8+64-36$

$=6^2$

$-\frac{9(x+2)^2}{6^2}+\frac{4(y-4)^2}{6^2}=1$

$-\frac{(x+2)^2}{2^2}+\frac{(y-4)^2}{3^2}=1$

Brennvidde: $c=\sqrt{a^2+b^2}$

$c=\sqrt{4+9}=\sqrt{13}$

For å finne brennpunkt

$$\frac{(y-4)^2}{3^2} - \frac{(x+2)^2}{2^2} = 1$$

Siden aksen til parabelen er parallell med y-aksen, da får vi

$(-2, 4)$ sentrum

$(-2, 4-\sqrt{13})$, $(-2, 4+\sqrt{13})$

Paraboloiden $z = x^2 + x + y^2 - 3y$

Planet $z = 4 + x - 3y$