

## Supplementary Problem for Worksheet 4

Math 126, Section A

February 1, 2007

Do this problem before you start on worksheet 4; attach to the worksheet.

For the following surfaces mark the shapes which can occur as cross sections by planes parallel to a given plane.

(a)  $x^2 + 2y^2 + 5z^2 = 1$

<b>xy-plane</b>	<b>yz-plane</b>	<b>xz-plane</b>
<input type="checkbox"/> circle	<input type="checkbox"/> circle	<input type="checkbox"/> circle
<input type="checkbox"/> ellipse	<input type="checkbox"/> ellipse	<input type="checkbox"/> ellipse
<input type="checkbox"/> hyperbola	<input type="checkbox"/> hyperbola	<input type="checkbox"/> hyperbola
<input type="checkbox"/> parabola	<input type="checkbox"/> parabola	<input type="checkbox"/> parabola
<input type="checkbox"/> line	<input type="checkbox"/> line	<input type="checkbox"/> line

(b)  $z = x^2 - 2y^2$

<b>xy-plane</b>	<b>yz-plane</b>	<b>xz-plane</b>
<input type="checkbox"/> circle	<input type="checkbox"/> circle	<input type="checkbox"/> circle
<input type="checkbox"/> ellipse	<input type="checkbox"/> ellipse	<input type="checkbox"/> ellipse
<input type="checkbox"/> hyperbola	<input type="checkbox"/> hyperbola	<input type="checkbox"/> hyperbola
<input type="checkbox"/> parabola	<input type="checkbox"/> parabola	<input type="checkbox"/> parabola
<input type="checkbox"/> line	<input type="checkbox"/> line	<input type="checkbox"/> line

(c)  $(y - 1)^2 + (z + 1)^2 = 4$

<b>xy-plane</b>	<b>yz-plane</b>	<b>xz-plane</b>
<input type="checkbox"/> circle	<input type="checkbox"/> circle	<input type="checkbox"/> circle
<input type="checkbox"/> ellipse	<input type="checkbox"/> ellipse	<input type="checkbox"/> ellipse
<input type="checkbox"/> hyperbola	<input type="checkbox"/> hyperbola	<input type="checkbox"/> hyperbola
<input type="checkbox"/> parabola	<input type="checkbox"/> parabola	<input type="checkbox"/> parabola
<input type="checkbox"/> line	<input type="checkbox"/> line	<input type="checkbox"/> line

(d)  $y^2 = z^2 - x^2$

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<b>xy-plane</b>	<b>yz-plane</b>	<b>xz-plane</b>
( ) circle	( ) circle	( ) circle
( ) ellipse	( ) ellipse	( ) ellipse
( ) hyperbola	( ) hyperbola	( ) hyperbola
( ) parabola	( ) parabola	( ) parabola
( ) line	( ) line	( ) line