

$$\textcircled{1} \quad 3x + 2y + 10z = 20$$

PLANE

Intercepts: Set $x=0$ and $y=0$: $10z = 20$
 $z = 2$

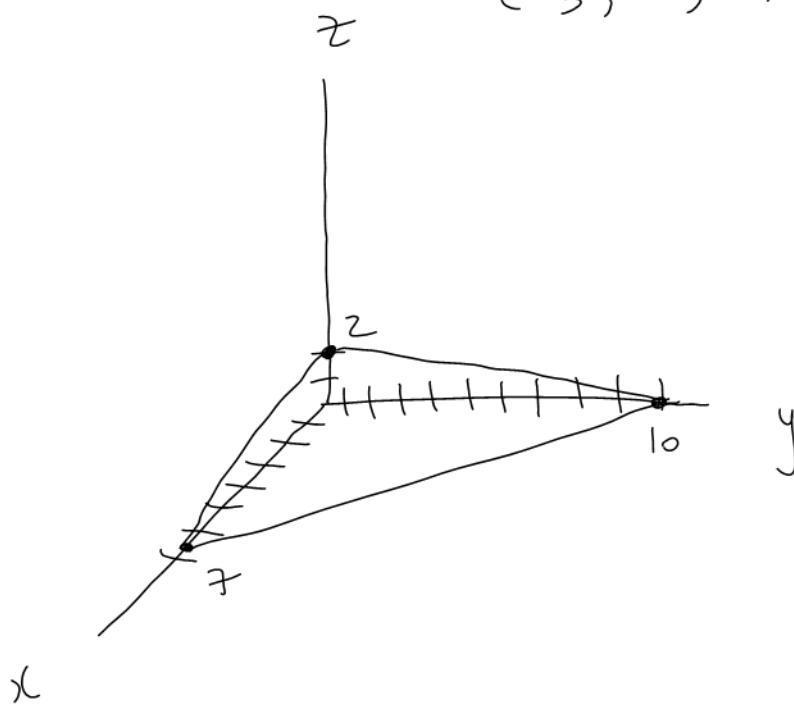
$$(0, 0, 2)$$

Set $x=0$ and $z=0$: $2y = 20$
 $y = 10$

$$(0, 10, 0)$$

Set $y=0$ and $z=0$: $3x = 20$
 $x = \frac{20}{3}$

$$\left(\frac{20}{3}, 0, 0\right)$$



⑨ $z = 4 - x^2 - y^2$

PARABOLOID

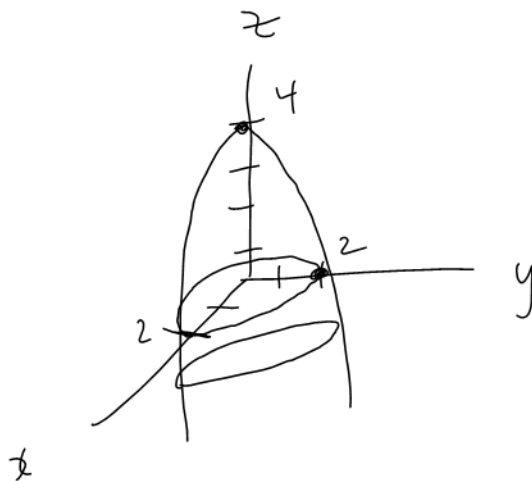
Could use traces or contour curves or transformations.

Contour Curves: $z > 4$: no solution

$z = 4$: $4 = 4 - x^2 - y^2$
 $x^2 + y^2 = 0$

$z = 0$: $0 = 4 - x^2 - y^2$
 $x^2 + y^2 = 4$

$z = -4$: $-4 = 4 - x^2 - y^2$
 $x^2 + y^2 = 8$



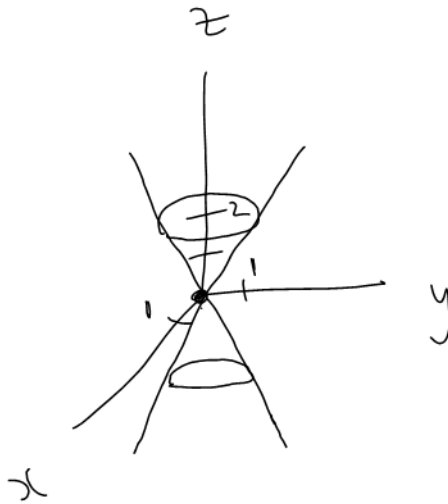
(13)

$$z^2 = 4(x^2 + y^2)$$

CONE WITH TWO NAPPES

Contour Curves : $z = 0 :$ $0 = 4(x^2 + y^2)$
 $0 = x^2 + y^2$

$z = \pm 2 :$ $4 = 4(x^2 + y^2)$
 $1 = x^2 + y^2$



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$$x^2 = 4z + 8$$

$$4z + 8 = x^2$$

$$4z = x^2 - 8$$

$$z = \frac{x^2}{4} - 2$$

(PARABOLIC) CYLINDER

x	z
0	-2
± 2	-1
± 4	2

