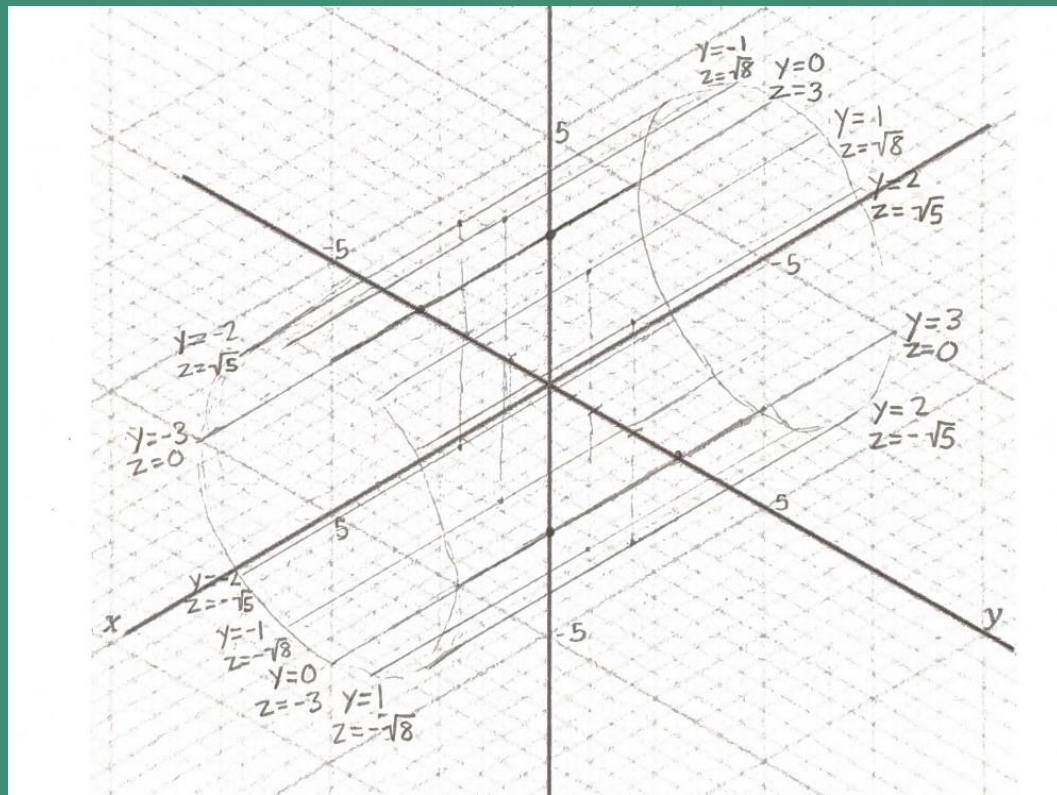
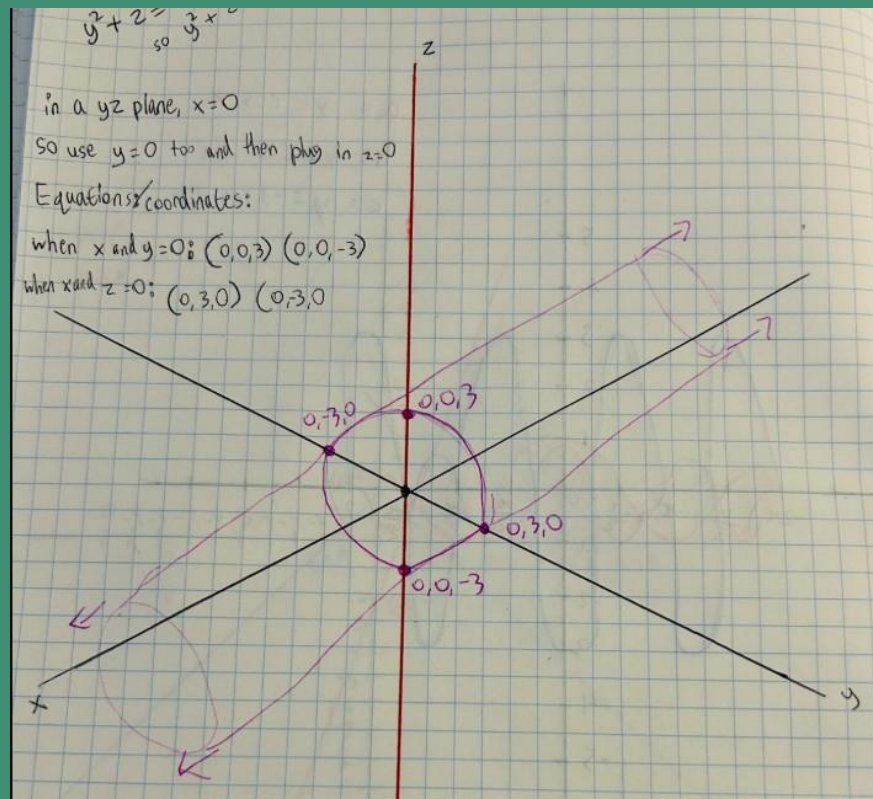




Graphing 3D Figures in (x, y, z)
Otis Allen



Graphing 3D Figures in (x, y, z)
Noor Ashfaq

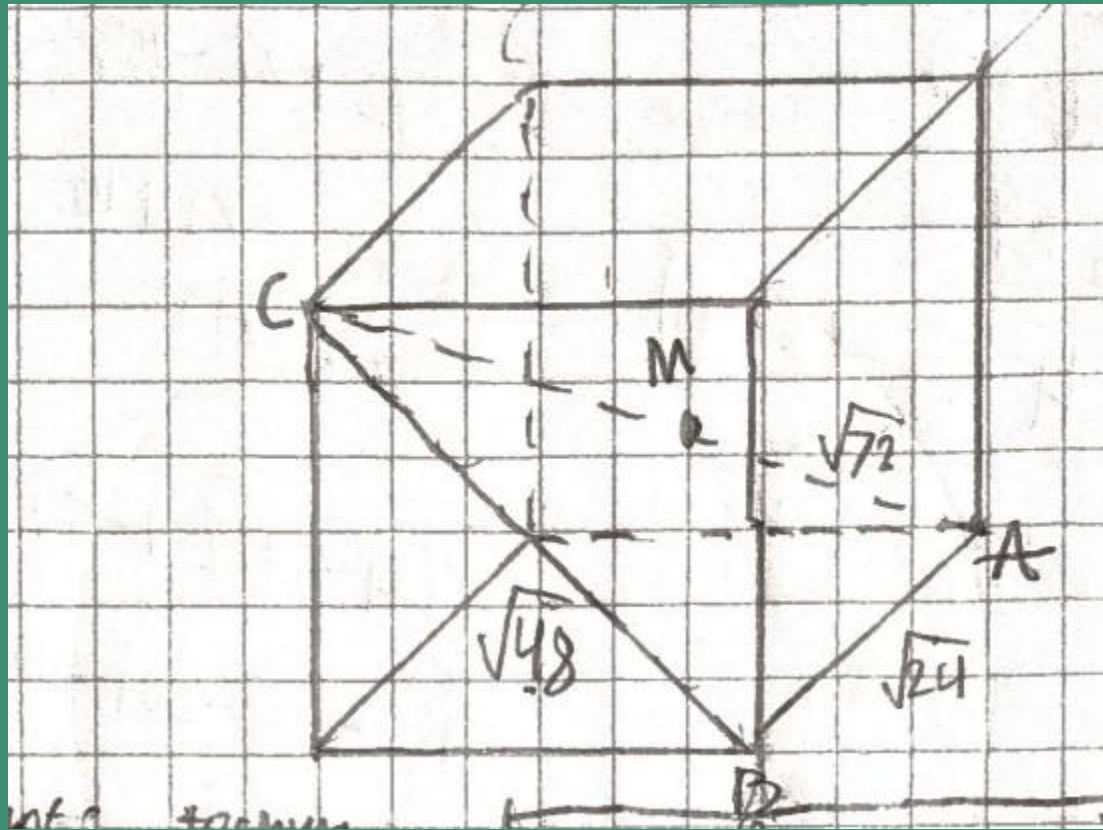
Rotating Points About the Origin

David Breeden

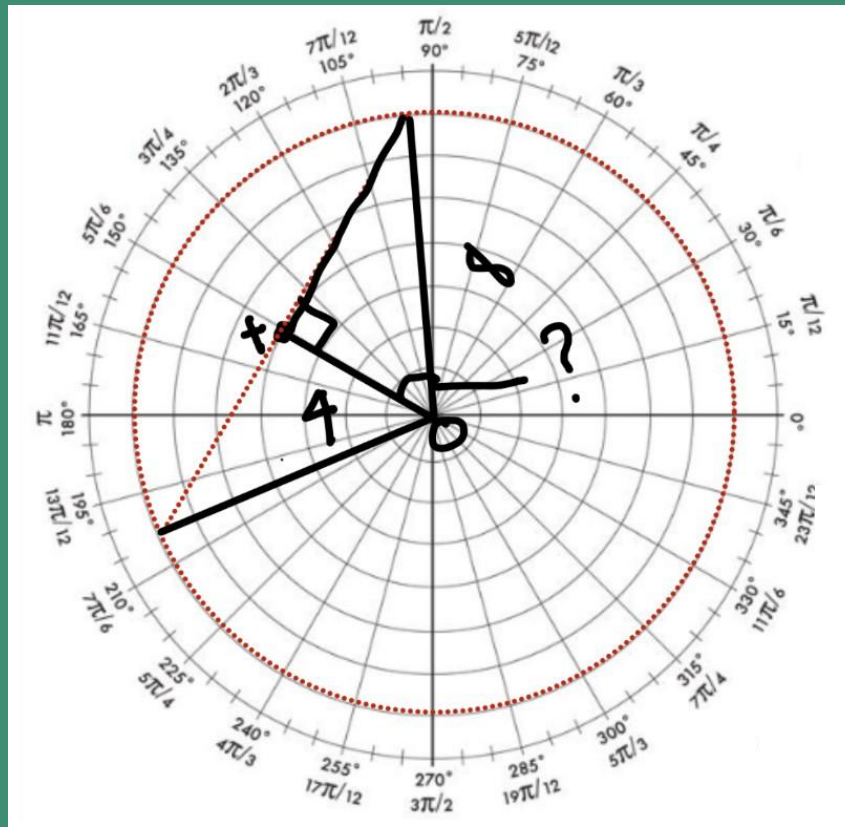
$2 \cos -60 - 8 \sin -60, 8 \cos -60 + 2 \sin -60$ because clockwise is the negative way
 -60 is in quad 4 so positive for cos and negative for sin

$2(\frac{1}{2}) - (8)(\frac{-\sqrt{3}}{2}), 8(\frac{1}{2}) + 2(\frac{-\sqrt{3}}{2})$ if we simplify we get

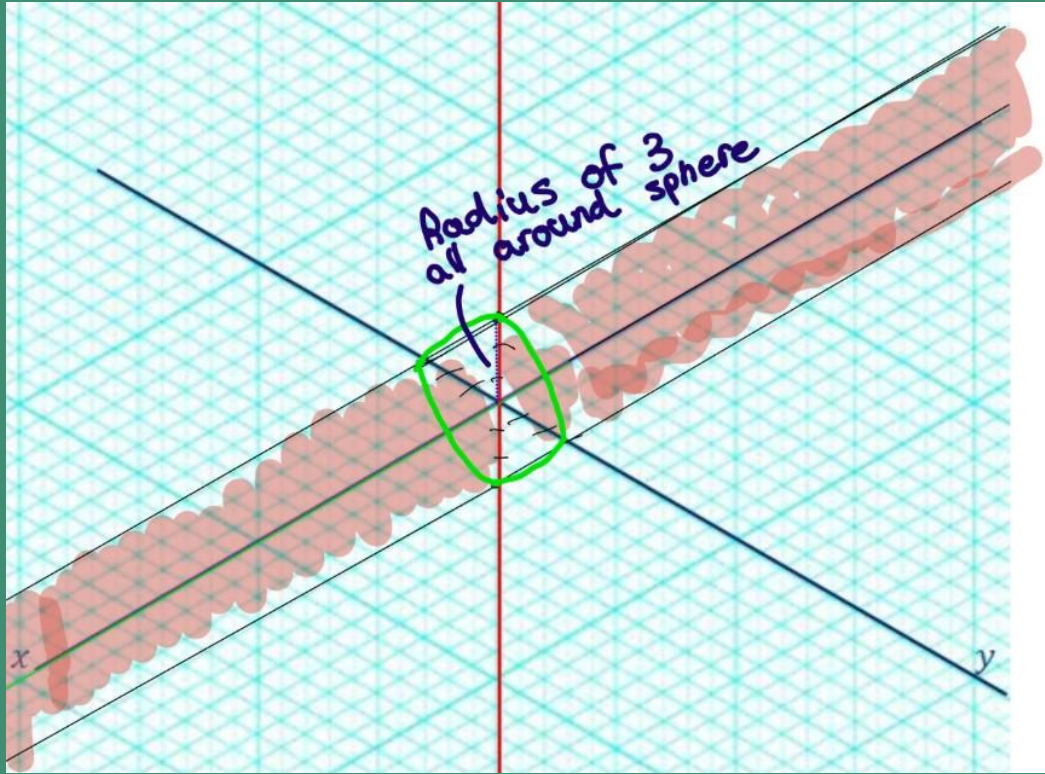
$(1 + 4\sqrt{3}, 4 - \sqrt{3})$



Alcumus Challenge: Vertices of a Cube
Humza Hussain

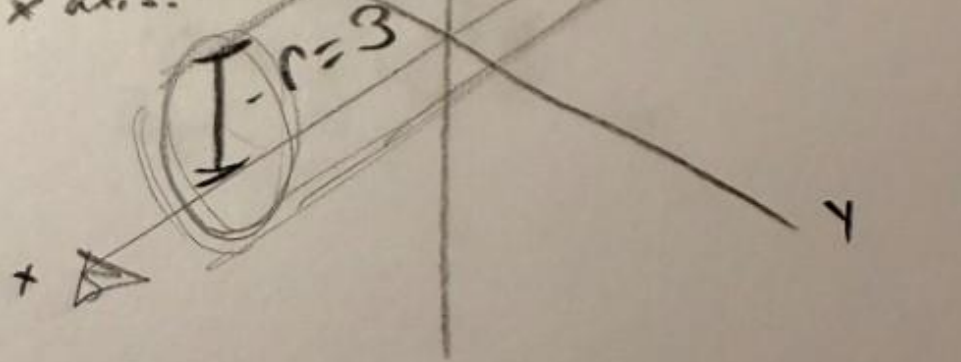


Locating Perpendicular Lines in Polar Coordinates
 Mariam Khan-Afridi

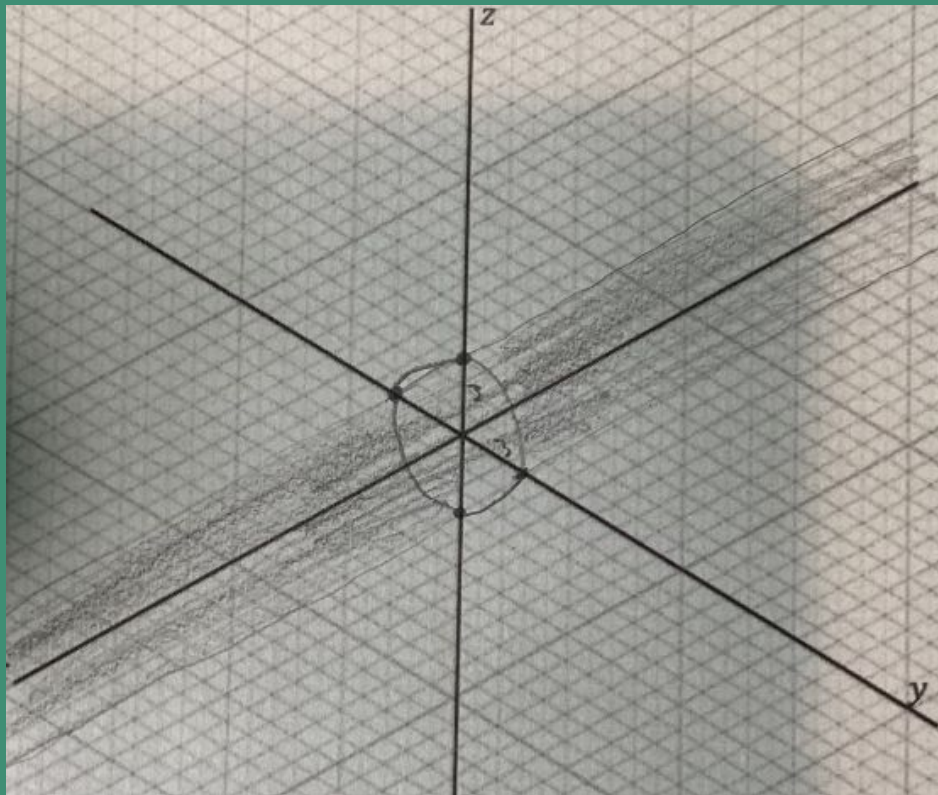


Graphing in 3D Plane
Mariam Khan-Afridi

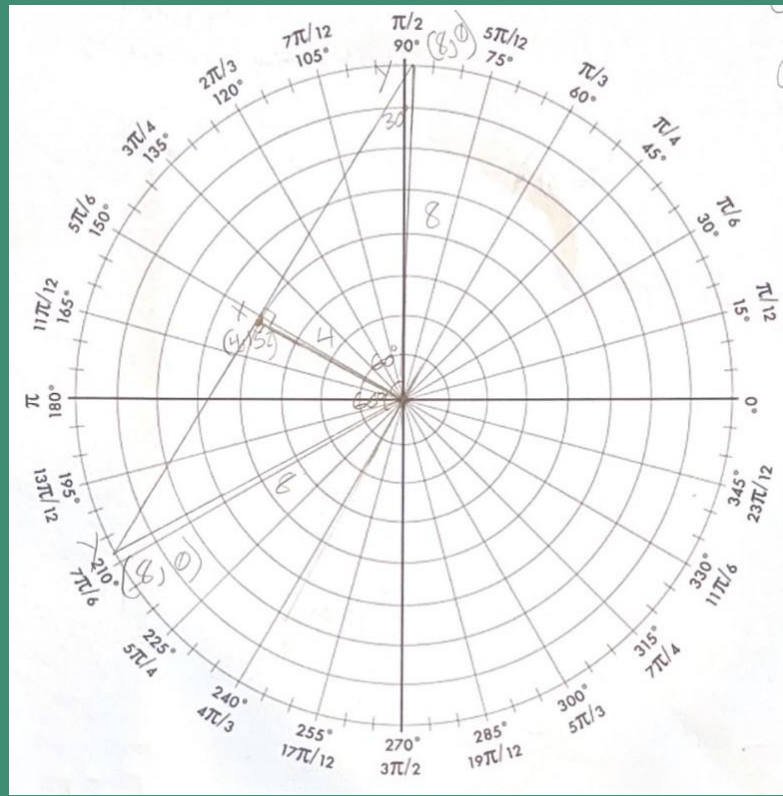
The equation $y^2 + z^2 = 9$, z
is a circle with a radius
of 3, but since there is
no x given, it extends
infinitely along
the x axis.



Graphing in 3D Plane
Sophia Gulyayeva



Graphing in 3D Plane
Ethan Graham



Using Polar Paper: Locating Perpendicular Lines

Joshua Tran

Converting to Spherical Coordinates

Coby Allen

$$\rho = \sqrt{x^2 + y^2 + z^2}$$

$$\tan(\theta) = \frac{y}{x}$$

$$\phi = \cos^{-1}\left(\frac{z}{\rho}\right)$$

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

$$\sqrt{(-2\sqrt{2})^2 + (2\sqrt{2})^2 + (4)^2}$$

$$\rho = 4\sqrt{2}$$

$$\tan(\theta) = \frac{2\sqrt{2}}{-2\sqrt{2}}$$

$$\frac{2\sqrt{2}}{-2\sqrt{2}} = -1$$

$$\tan^{-1}(1) = -\frac{\pi}{4}$$

$$\theta = \pi - \frac{\pi}{4}$$

$$\theta = \frac{3\pi}{4}$$

$$\cos^{-1}\left(\frac{4}{4\sqrt{2}}\right)$$

$$\phi = \frac{\pi}{4}$$

Rectangular --> Cylindrical

$$(r, \theta, z)$$

$$z = 2$$

$$r = \sqrt{x^2 + y^2} = \sqrt{\frac{75}{9} + 25} = \sqrt{\frac{25}{3} + \frac{75}{3}} = \sqrt{\frac{100}{3}} = \frac{10}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{10\sqrt{3}}{3}$$

$$\theta = \arctan \frac{y}{x} = \arctan \frac{5}{\frac{-5\sqrt{3}}{3}} = \frac{15}{-5\sqrt{3}} = \frac{3}{-\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = -\frac{3\sqrt{3}}{3} = \arctan -\sqrt{3}$$

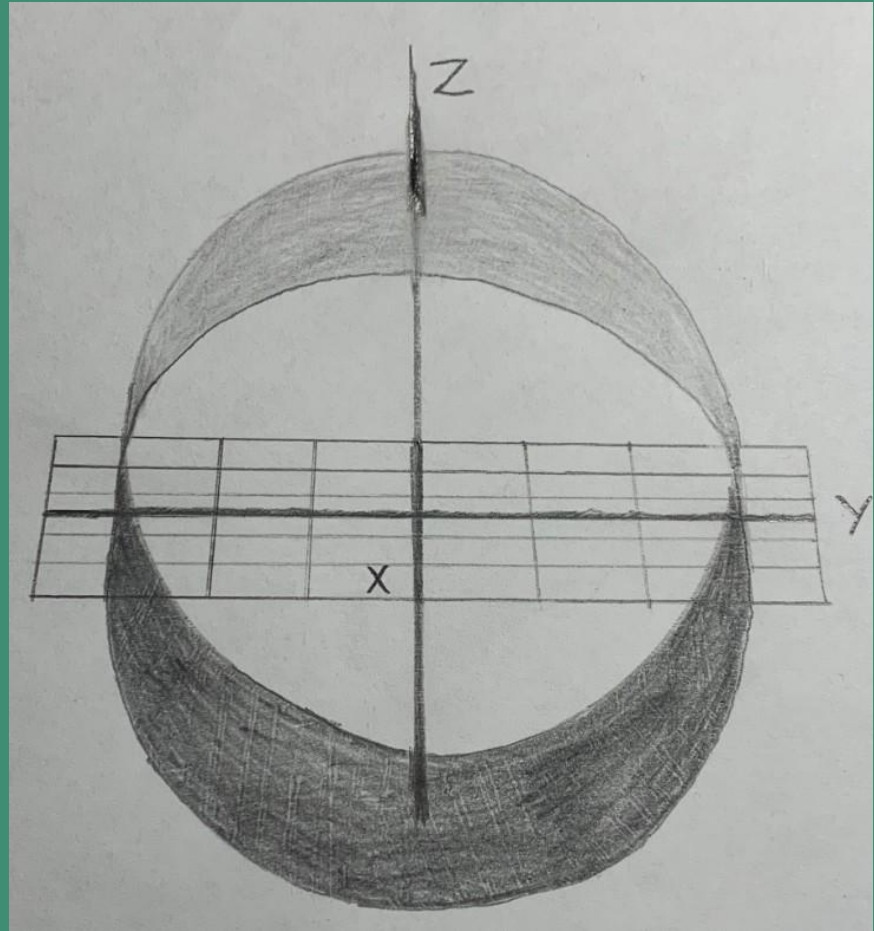
$$\arctan -\sqrt{3} = \frac{2\pi}{3}$$

$$\left(\frac{10\sqrt{3}}{3}, \frac{2\pi}{3}, 2\right)$$

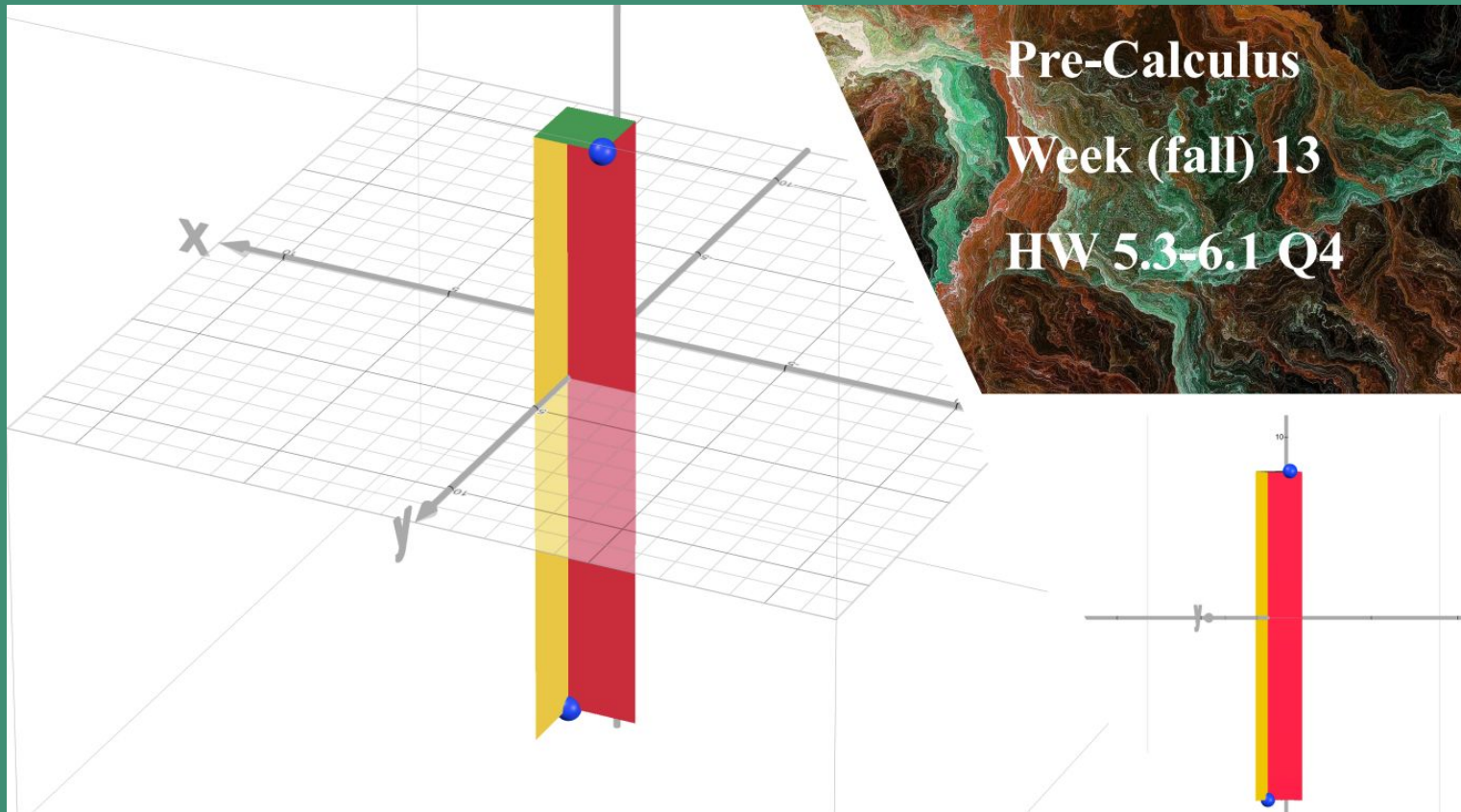
Alexandra Budrejko

Hand Sketch of 3D

Lucas Segaud



Creating in 3D Desmos



Cale Waite