

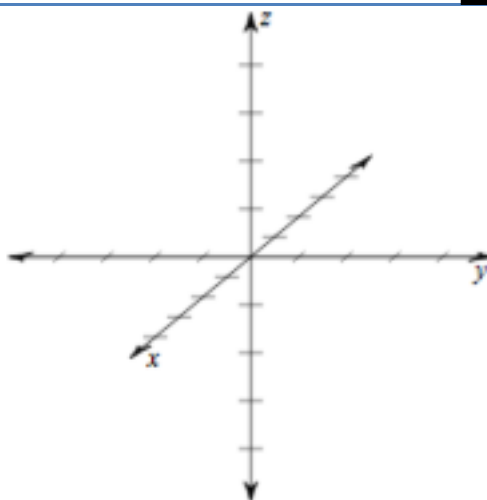
13.1 Three Dimensional Graphs

NOTES

Write your questions here!



Plotting 3D Points:



Midpoint Formula:

2D

3D

Distance Formula:

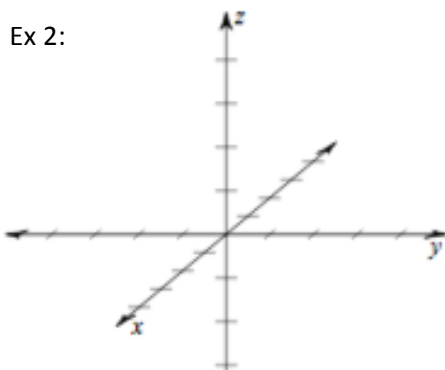
2D

3D

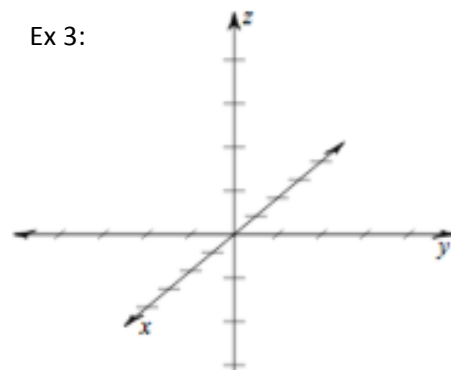
Ex 1:

Graph a Linear Equation with Three Variables:

Ex 2:



Ex 3:



Now,
summarize
your notes
here!

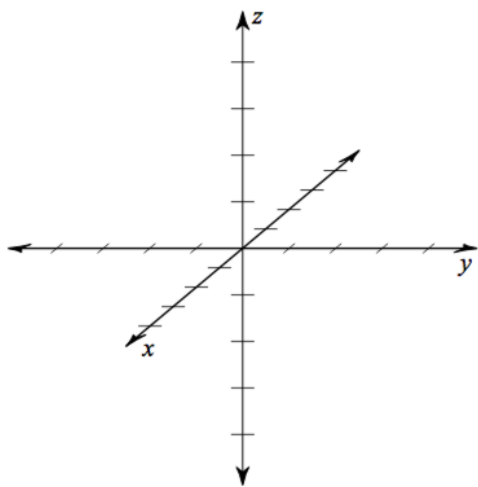
SUMMARY:

13.1 Three Dimensional Graphs

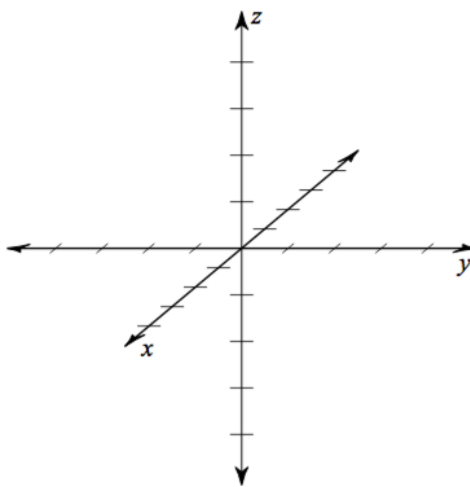
PRACTICE

Directions: Plot each given point. Make sure you show how you got to your point.

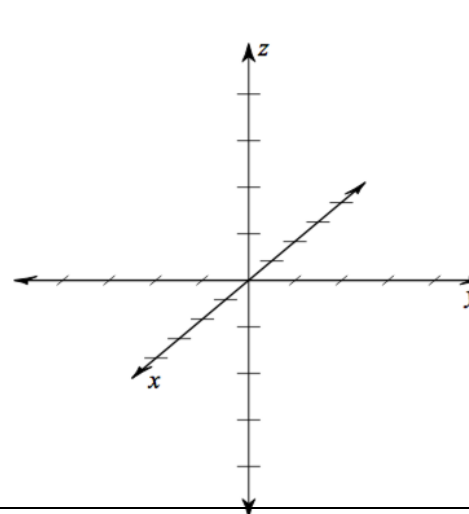
1) $(0, -4, 3)$



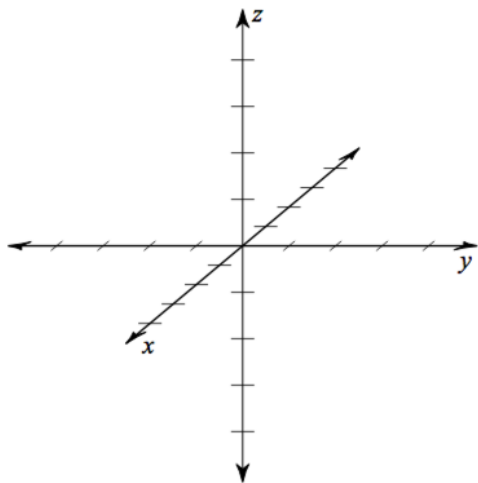
2) $(-2, -1, 4)$



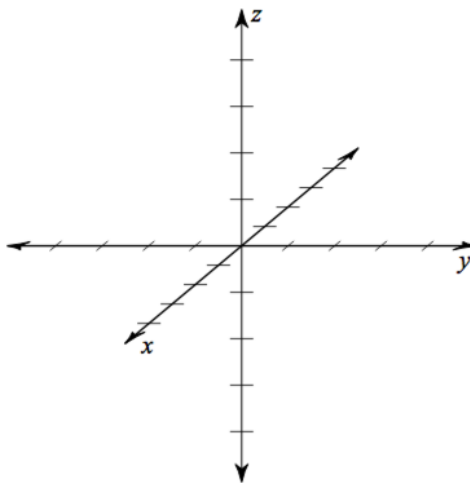
3) $(4, 3, -2)$



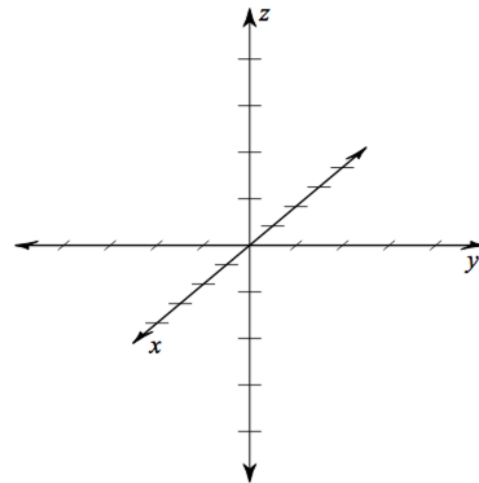
4) $(-4, -4, -4)$



5) $(3, 0, -1)$



6) $(3, 2, 1)$



Directions: Find the distance and midpoint for each.

7) $(5, 0, 12)$ and $(-4, 8, -2)$

8) $(-7, 3, 4)$ and $(-3, 8, -9)$

9) $(-4, -4, -4)$ and $(10, 0, -2)$

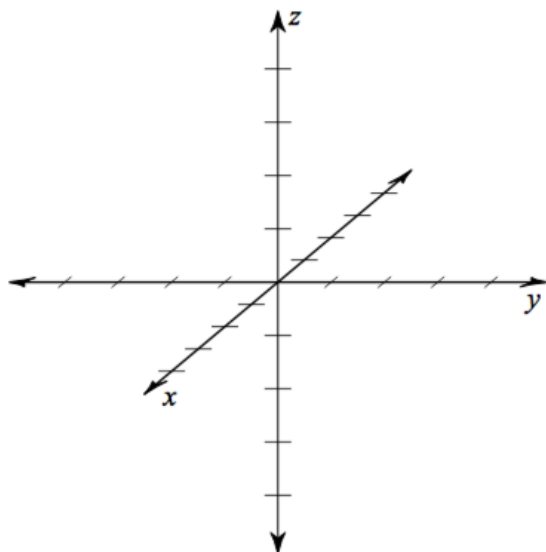
10) $(4, 9, 2)$ and $(-4, -9, -2)$

11) $(15, -2, 6)$ and $(-5, 8, 0)$

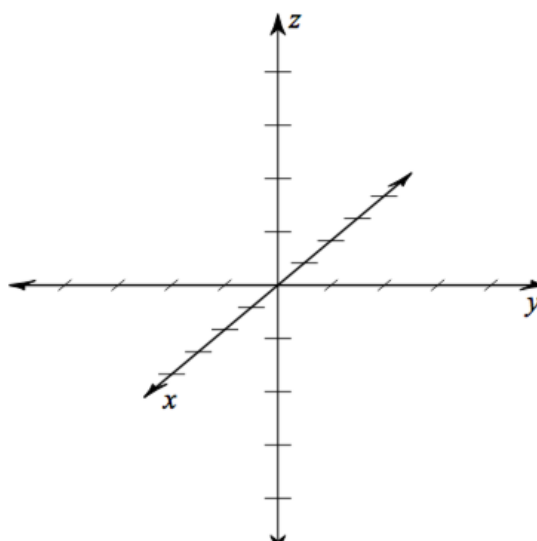
12) $(-5, -6, -7)$ and $(0, 0, 6)$

Directions: Find the intercepts and graph the equation.

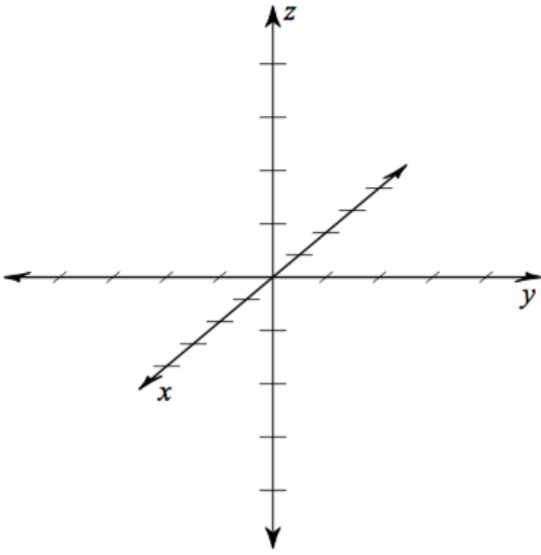
13) $x - 2y + z = 2$



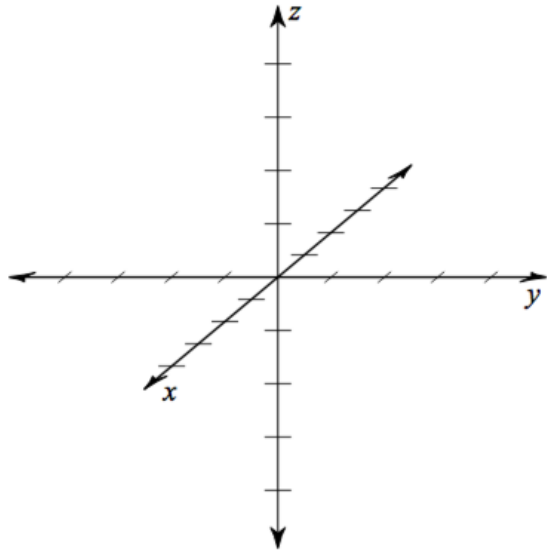
14) $3x + 6y - 2z = -6$



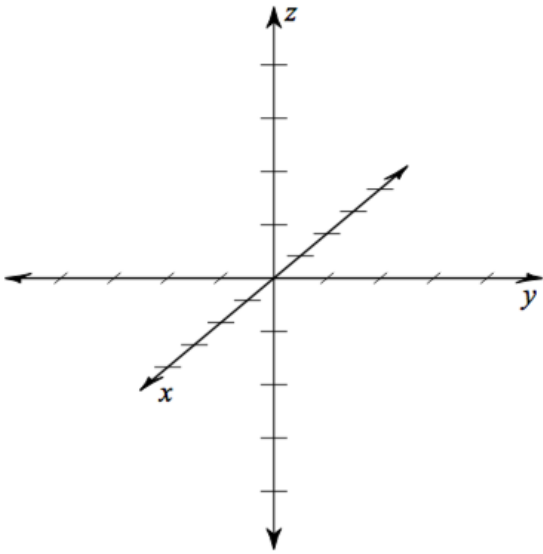
15) $2x + 4y - 8z = 8$



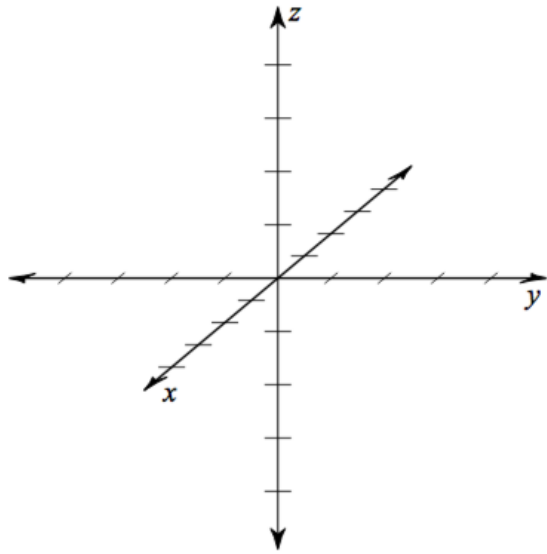
16) $5x + 10y - 20z = 20$



17) $8x - 2z = -8$



18) $32x - 16y + 64z = -64$



REVIEW SKILLZ

Find the next two terms and describe how the sequence is derived.

1) $\frac{2}{9}, \frac{2}{3}, 2, 6, 18$

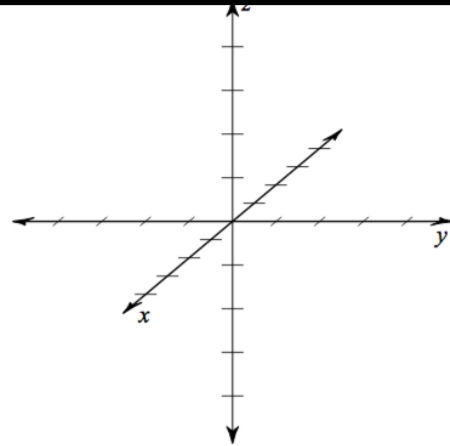
2) $2, -4, 8, -16$

3) $1, -1, -3, -5$

13.1 Three Dimensional Graphs

1) Find the distance and midpoint from $(4, -3, 10)$ and $(-8, 7, -14)$.

2) Graph the equation: $5x - 4y + 10z = -20$



3) Bean, Brust and Kelly are trying to realize a life-long dream...they want to own their own polish pottery store. They just can't get enough of that blue earthenware. They figure that they need to have at least 12,500 pieces of polish pottery to open the store. One summer they go out on a mission to collect enough pieces to start their store. Bean is collecting 96 pieces a day, Brust is collecting 82 pieces a day and Kelly gathers a whopping 128 pieces a day.

a) Write an equation that models the above situation, where x represents the number of days Bean collects, y for Brust and z for Kelly.

b) Solve your above equation to isolate Bean's number of days.

c) Suppose Brust collects for 55 days and Kelly collects for 42 days. How many days would Bean need to collect in order to reach their goal?

4) After a summer of shopping through Poland to get their Polish Pottery inventory fully stacked the boys realize they are flat broke. They currently owe \$55,000 to the creditors. They've simplified their selling process and have categorized the pieces by small, medium and large. They decide to sell the small items for \$37.50, the medium items for \$48.75 and the large items for \$58.95.

a) Write an equation for the above situation.

b) Write the above equation as a function of the large pieces (solve the equation for the large pieces).

c) Suppose they guys sell 6386 small items and 4376 medium items. How many large items would they need to sell to break even?

5) The standard equation for a sphere with center (h, k, l) and radius r is: $(x - h)^2 + (y - k)^2 + (z - l)^2 = r^2$.

a) Graph: $(x)^2 + (y - 1)^2 + (z + 2)^2 = 4$

b) $(x - 1)^2 + (y + 1)^2 + (z + 1)^2 = 9$

