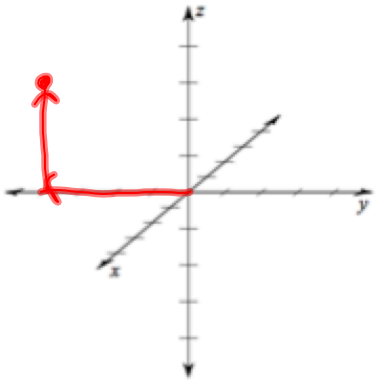
13.1 Three Dimensional Graphs

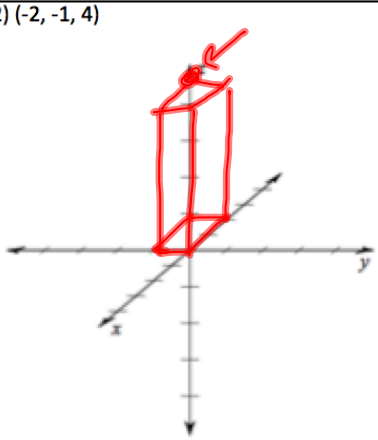
PRACTICE

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

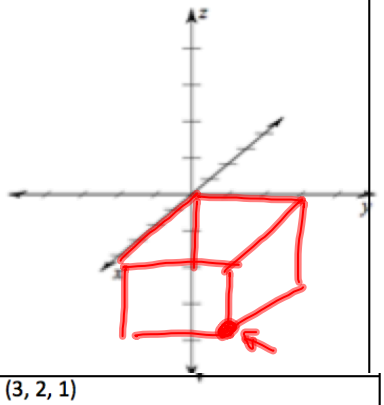
1) (0, -4, 3)



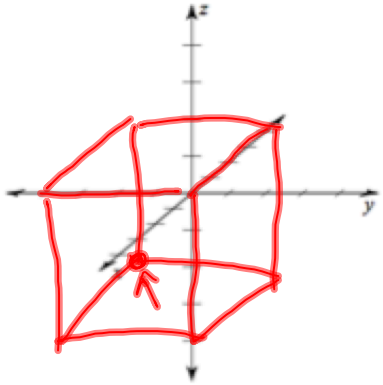
2) (-2, -1, 4)



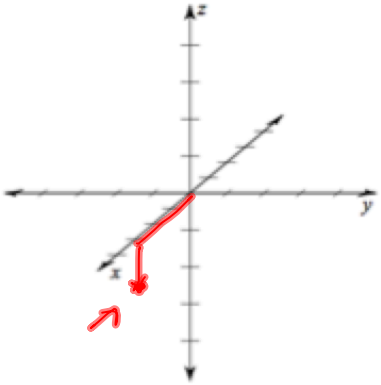
3) (4,3,-2)



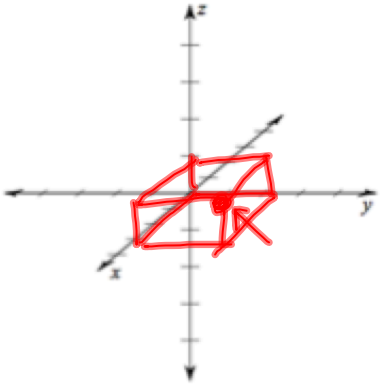
4) (-4, -4, -4)



5) (3, 0, -1)



6) (3, 2, 1)



Directions: Find the distance and midpoint for each.

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

$\sqrt{(-4-5)^2+(0-8)^2+(-2-12)^2}$

$\sqrt{(-9)^2+(-8)^2+14^2}$

$\sqrt{341}$

≈ 18.47

$\left(\frac{5+-4}{2}, \frac{0+8}{2}, \frac{12+-2}{2}\right)$

$\left(\frac{1}{2}, 4, 5\right)$

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

$\sqrt{(-7--3)^2+(3-8)^2+(4--9)^2}$

$\sqrt{(-4)^2+(-5)^2+(13)^2}$

$\sqrt{210}$

≈ 14.49

$\left(\frac{-7+-3}{2}, \frac{3+8}{2}, \frac{4+-9}{2}\right)$

$\left(-5, \frac{11}{2}, \frac{-5}{2}\right)$

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

$\sqrt{(-4-10)^2+(-4-0)^2+(-4-2)^2}$

$\sqrt{(-14)^2+(-4)^2+(-2)^2}$

$\sqrt{216} \approx 14.7$

$\left(\frac{-4+10}{2}, \frac{-4+0}{2}, \frac{-4+-2}{2}\right)$

$(3, -2, -3)$

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

$\sqrt{(4--4)^2+(9--9)^2+(2--4)^2}$

$\sqrt{82+18^2+4^2}$

$\sqrt{404} \approx 20.10$

$\left(\frac{4+-4}{2}, \frac{9+-9}{2}, \frac{2+-2}{2}\right)$

$(0, 0, 0)$

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

$\sqrt{(15--5)^2+(-2-8)^2+(6-0)^2}$

$\sqrt{20^2+(-10)^2+6^2}$

$\sqrt{536} \approx 23.15$

$\left(\frac{15+-5}{2}, \frac{-2+8}{2}, \frac{6+0}{2}\right)$

$(5, 3, 3)$

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

$\sqrt{(-5-0)^2+(-6-0)^2+(-7-6)^2}$

$\sqrt{(-5)^2+(-6)^2+(-13)^2}$

$\sqrt{230} \approx 15.17$

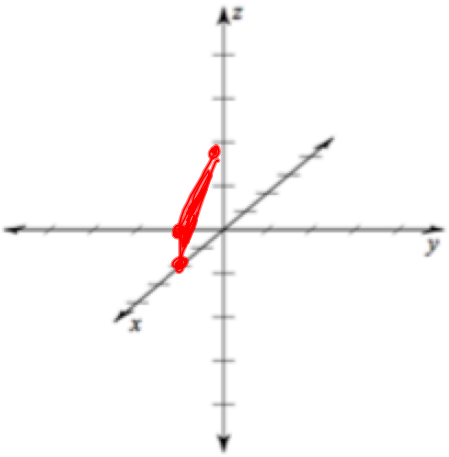
$\left(\frac{-5+0}{2}, \frac{-6+0}{2}, \frac{-7+6}{2}\right)$

$\left(-\frac{5}{2}, -3, -\frac{1}{2}\right)$

Directions: Find the intercepts and graph the equation.

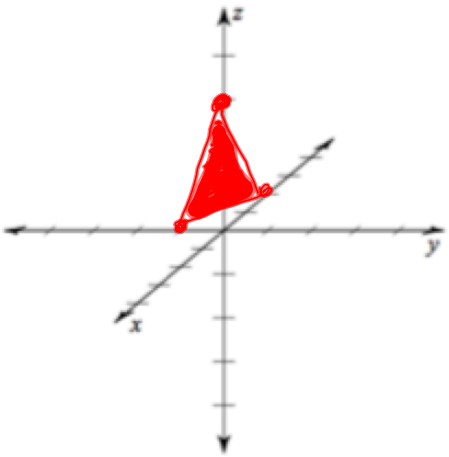
13) x – 2y + z = 2

$x=2$ $\quad -2y=2 \quad y=-1$ $\quad z=2$



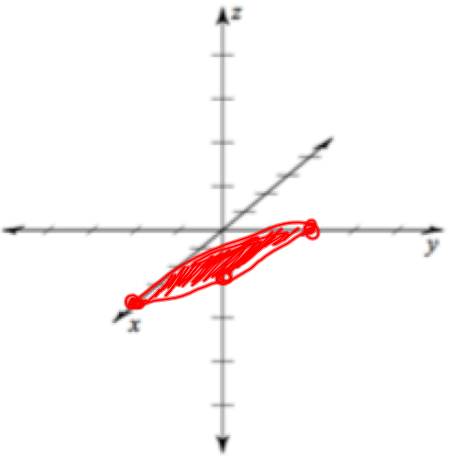
14) 3x + 6y – 2z = -6

$3x=-6 \quad x=-2$ $\quad 6y=-6 \quad y=-1$ $\quad -2z=-6 \quad z=3$



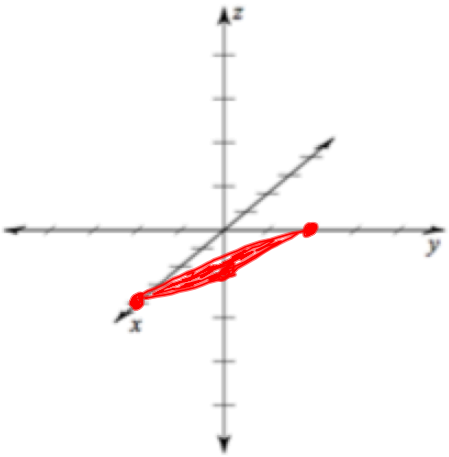
15) x + 4y – 8z = 8

$2x=8 \quad x=4$ $\quad 4y=8 \quad y=2$ $\quad -8z=8 \quad z=-1$



16) 5x + 10y – 20z = 20

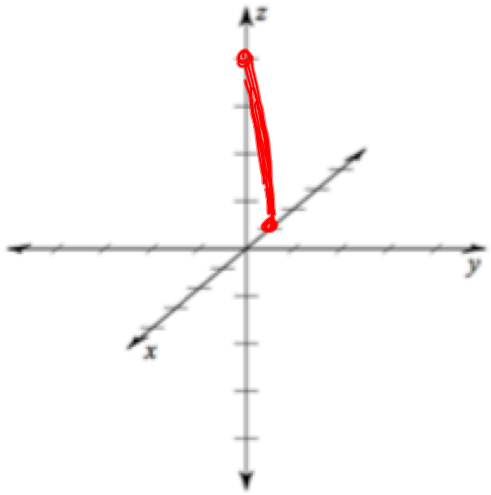
$5y=20 \quad x=4$ $\quad 10y=20 \quad y=2$ $\quad -20z=20 \quad z=-1$



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

$8x = -8 \quad | \quad -2z = -8$

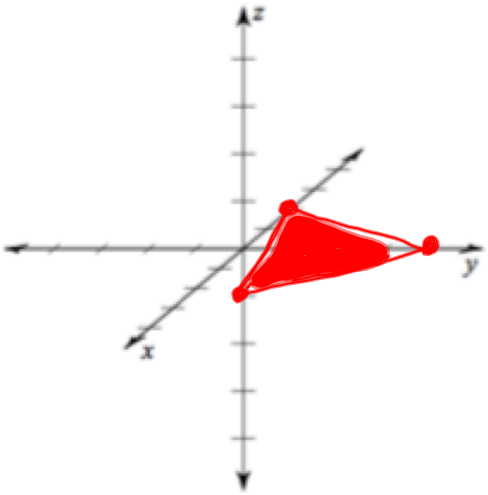
$x = -1 \quad | \quad z = 4$



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

$32x = -64 \quad \{ \quad -16y = -64 \quad \{ \quad 64z = 64$

$x = -2 \quad \{ \quad y = 4 \quad \{ \quad z = 1$



REVIEW SKILLZ

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

1) $\frac{2}{9}, \frac{2}{3}, 2, 6, 18, 54, 162$

Multiply the previous term by 3

2) 2, -4, 8, -16, 32, -64

Multiply the previous term by -2.

3) 1, -1, -3, -5, -7, -9

Subtract the previous term by 2.