

Answer application problems with complete sentences using proper units.

4. The relationship between the tuition, T , and the number of credits, c , at a particular college is given by

$$T(c) = \begin{cases} 100 + 220c & 0 \leq c \leq 6 \\ 800 + 220(c-6) & 6 < c \leq 18 \end{cases}$$

- A. What is the tuition for 7 credits?

$$T(7) = 800 + 220(7-6) = 920$$

The tuition for seven credits is \$920.

- B. If the tuition was \$3000, how many credits were taken?

$$\begin{aligned} 1880 &= 800 + 220(c-6) & 9 &= c-6 \\ 1080 &= 220(c-6) & c &= 15 \end{aligned}$$

The tuition is \$1880
When 15 credits are taken

- C. What is the domain of this function?

$$\{c \mid 0 \leq c \leq 18, c \text{ is an integer}\}$$

- D. Give a practical interpretation of the vertical intercept.

$$T(0) = 100$$

The vertical intercept is $(0, 100)$.

This means that tuition is \$100 with 0 credits.

This would be a registration fee or orientation fee.

- E. Give a practical interpretation of the slope.

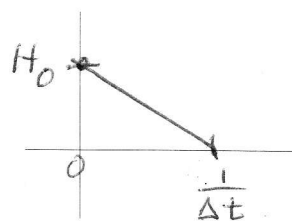
The slope is 220. This is the cost per credit.

5. Sketch $H(\alpha) = H_0(1 - \alpha \cdot \Delta t)$. Label the axes and the intercepts clearly. The constants are positive.

This is a linear function

$$H(\alpha) = H_0 - H_0 \cdot \Delta t \cdot \alpha$$

$$H(0) = H_0$$



for horizontal intercept
 $H_0(1 - \alpha \cdot \Delta t) = 0$
 $1 - \alpha \cdot \Delta t = 0$
 $\alpha \cdot \Delta t = 1$
 $\alpha = \frac{1}{\Delta t}$

6. Solve $g(y) = 5$ for $g(y) = \sqrt{y^2 - 16}$.

$$\sqrt{y^2 - 16} = 5$$

$$y^2 - 256 = 25$$

$$y^2 = 281$$

$$y = \pm \sqrt{281}$$

7. Find the domain and range of $f(x) = \left| \frac{9-x^2}{x+3} \right|$.

For domain: $x+3$ cannot equal 0

$$D: \{x \mid x \neq -3\}$$

For range: There will be no negative values because of the absolute value

$$R: [0, \infty) \quad \text{or} \quad \{y \mid y \geq 0\}$$