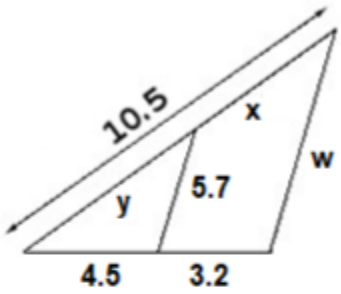
THIRD TERM GLOBAL TEST – 3° ESO

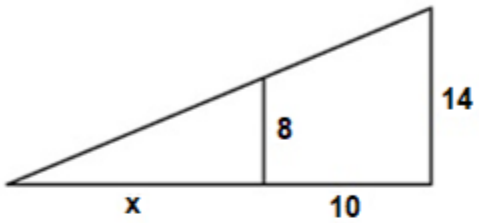
Exercise 1: (1.75 ptos) Find the values of the indeterminates:

a)



$\boxed{x = 6.14}$ $\boxed{y = 4.36}$ $\boxed{w = 9.75}$

b)

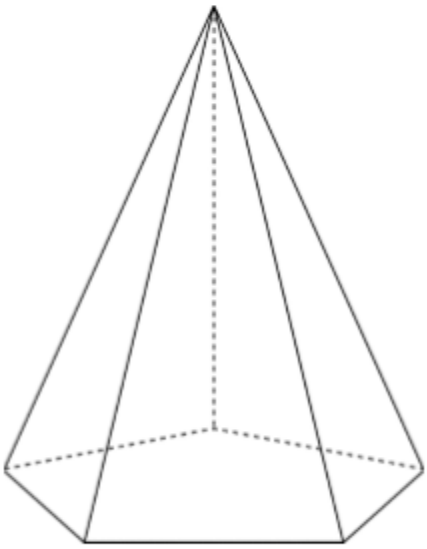


$\boxed{x = 13.33}$

Exercise 2: (0.75 ptos) Find the axial diagonal of a cube if the sides have lengths of 12 cm

$\boxed{D = 20.78 \text{ cm}}$

Exercise 3: (1.75 ptos) Work out the value of the area of a regular pentagonal pyramid if the length of the side of the base is 13 cm, its radius measures 10 cm and the edge of the faces has a length of 12 cm. Find also the value of the altitude that goes from the vertex to the center of the base.



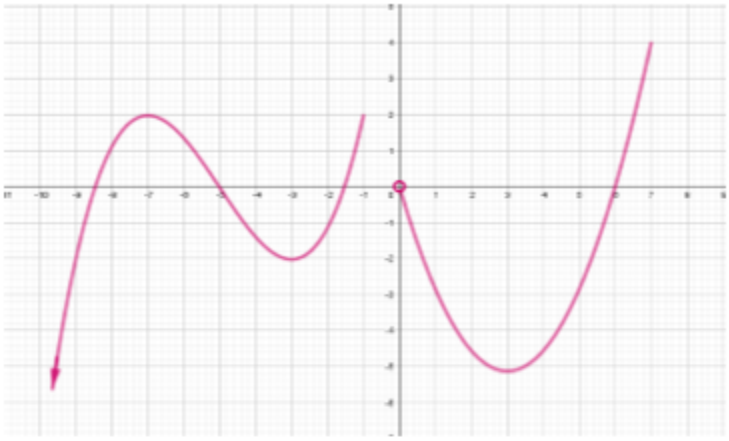
$\boxed{\begin{array}{l} A_{LAT} = 327.83 \text{ cm}^2 \\ A_{BASE} = 246.98 \text{ cm}^2 \\ A_{PYR} = 547.81 \text{ cm}^2 \\ H = 6.63 \text{ cm} \end{array}}$

Exercise 4: (1 pto) Find the domain of the following functions

a) $f(x) = \dfrac{7x+3}{x^2-1} \rightarrow \boxed{\text{Dom } f = \mathbb{R} - \{\pm 1\}}$

b) $f(x) = \sqrt[4]{x+3} \rightarrow \boxed{\text{Dom } f = [-3, +\infty)}$

Exercise 5: (1.5 ptos) Given the graph of the following function:



a) Indicate its domain and its image

$\text{Dom } f = (-\infty, -1] \cup (0, 7)$ $\quad$ $\text{Im } f = (-\infty, 4]$

c) Study its monotony

Increases: $(-\infty, -7) \cup (-3, -1) \cup (3, 7)$ $\quad$ Decreases: $(-7, -3) \cup (0, 3)$

d) Study the extrema

Relative maxima: $x = -7, \quad x = -1, \quad x = 7$ $\quad$ Absolute maximum: $x = 7$

Relative minima: $x = -3, \quad x = 3$ $\quad$ Absolute minimum: $\nexists$

Exercise 6: (1.75 points)

a) Find the equation of the straight line that goes through the points $P(-1,12)$ and $Q(1,-2)$

$\boxed{y = 5x - 7}$

b) Given the equation of the straight line $2x - y - 3 = 0$, find the equation of a parallel line that goes through the point $A(3,-4)$

$\boxed{2x - y - 10 = 0}$

c) Find the **general** equation of the straight line given by $y = \frac{3x}{5} - \frac{1}{2}$ $\quad$ $\boxed{6x - 10y - 5 = 0}$

Exercise 7: (1.5 points) Plot the graph of the piecewise function, studying all the characteristics of the parabola:

$$f(x) = \begin{cases} 7 - 2x & x < 2 \\ x^2 - 8x + 12 & x \geq 2 \end{cases}$$