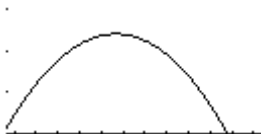
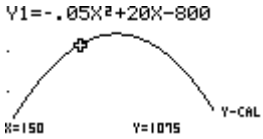
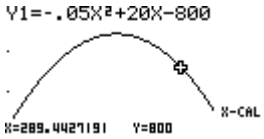
PROPOSTA DE RESOLUÇÃO DO 5º TESTE DE MATEMÁTICA B – 10º G **09 MAIO 08**

1.

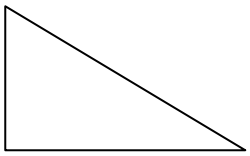






A

1075 – 800 = 275



B

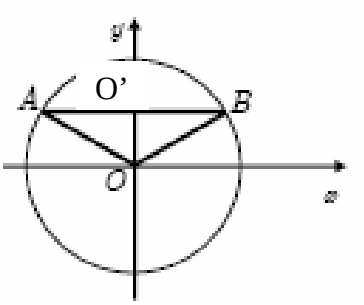
289,4 - 150 = 139,4

Então

$$\overline{AB}^2 = 275^2 + 139,4^2 \Leftrightarrow \overline{AB} = \sqrt{95057,36} \simeq 308$$

Os pára-quedistas estão a uma distância de 308 metros um do outro.

2.



O raio do círculo trigonométrico é 1. Logo $\overline{AO} = \overline{BO} = 1$

Assim:

$$\cos 30^o = \frac{\overline{O'B}}{1} \quad e \quad sen 30^o = \frac{\overline{O'O}}{1} \Leftrightarrow$$

$$\overline{O'B} = \frac{\sqrt{3}}{2} \quad e \quad \overline{O'O} = \frac{1}{2}$$

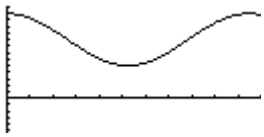
Logo,

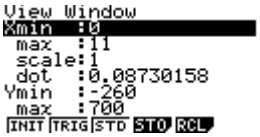
$$Area = \frac{\overline{AB} \times \overline{O'O}}{2} = \frac{\cancel{2}\frac{\sqrt{3}}{\cancel{2}} \times \frac{1}{2}}{2} = \frac{\sqrt{3}}{4}$$

$$Perimetro = \overline{AB} + \overline{AO} + \overline{BO} = \frac{\sqrt{3}}{2} + 1 + 1 = \frac{\sqrt{3}}{2} + 2$$

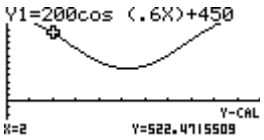
3. $d(t) = 200\cos(0,6t) + 450$

3.1.



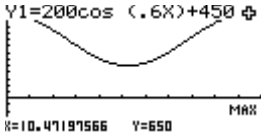


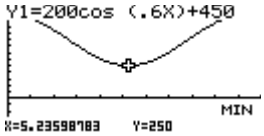
3.2.



<u>ou</u> $d(2) = 200\cos(0,6 \times 2) + 450 = 522$

3.3.





A despesa de electricidade varia entre os 250 e os 650 euros.

4.

4.1. $Area = A_{rectangulo} - A_{\Delta[DFC]} =$

$$= 8\times 4 - \frac{\overline{DC}\times\overline{EF}}{2} = 32 - \frac{\overline{DC}\times\overline{EF}}{2}$$

Como $\overline{DC} = 2\times\overline{EC} = 2\times 4 = 8$

$$tg\theta = \frac{\overline{EF}}{\overline{EC}} \Leftrightarrow tg\theta = \frac{\overline{EF}}{4} \Leftrightarrow 4tg\theta = \overline{EF}$$

Então

$$A(\theta) = 32 - \frac{8\times 4tg\theta}{2} = 32 - 16tg\theta \quad ,0 \le \theta \le \frac{\pi}{4}$$

4.2. $A(0) = 32 - 16tg0 = 32$

Quando o ângulo é zero a área é a área de um rectângulo de base 8 e altura 4.

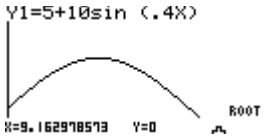
5.

5.1. $h(0) = 5 + 10\,sen(0,4\times 0) = 5$

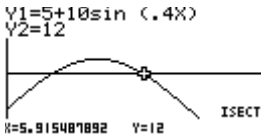
O avião foi lançado a 5 metros de altura.

5.2. $h(x) = 0$

$a = 9,16m$



5.3. $h(x) = 12$



O Avião percorreu 6 metros.