



a) Given:

- 1 Zero $\rightarrow (9 \text{ sec}, 0 \text{ m})$
- Vertex $\rightarrow (0 \text{ sec}, 396.9 \text{ m})$

Find distance between zero and vertex: ✓

$$9 \text{ sec} - 0 \text{ sec} = 9 \text{ sec}$$

That means the other zero is $0 \text{ sec} - 9 \text{ sec} = -9 \text{ sec} \rightarrow (-9 \text{ sec}, 0 \text{ m})$

Using the factored form $y = a(x-r_1)(x-r_2)$; find the a value:

$$y = a(x-9)(x+9) \leftarrow \begin{array}{l} \text{putting in the zeros} \\ \text{putting in the vertex} \end{array}$$

$$396.9 = a(0-9)(0+9) \checkmark$$

$$a = -4.9$$

$$y = -4.9(x-9)(x+9) \checkmark \checkmark$$

b) Given:

- 1 Zero $\rightarrow (9.5 \text{ sec}, 0 \text{ m})$
- Vertex $\rightarrow (1.25 \text{ sec}, 333.5 \text{ m})$

Find distance btwn zero and vertex: ✓

$$9.5 - 1.25 = 8.25$$

$$1.25 - 8.25 = -7 \checkmark$$

Zeros: $(9.5, 0)$ & $(-7, 0)$

Using factored form $y = a(x-r_1)(x-r_2)$, find a :

$$y = a(x-9.5)(x+7)$$

$$333.5 = a(1.25-9.5)(1.25+7) \checkmark$$

$$a = -4.9$$

$$y = -4.9(x-9.5)(x+7) \checkmark \checkmark$$

Clue 1 cont:

c) $y = -4.9(x-9)(x+9)$ and $y = -4.9(x-9.5)(x+7)$

$$-4.9(x-9)(x+9) = -4.9(x-9.5)(x+7) \quad \checkmark$$

$$x^2 - 81 = x^2 - 2.5x - 66.5 \quad \checkmark$$

$$2.5x = 14.5 \quad \checkmark$$

$$x = 5.8 \quad \checkmark$$

→ yes //

d) $5.8^{2*} \checkmark$ ←

✓ 3

✓ 2

Q2: a) $C(n) = 15 \log n + 5 \quad \checkmark$ b) $B(n) = 100(0.85)^n \quad \checkmark$

$$20 = 15 \log n + 5 \quad \checkmark$$

$$1 = \log n \quad \checkmark$$

$$n = 10^1 \quad \checkmark$$

$$n = 10 // \quad \checkmark$$

$$= 100(0.85)^{10} \quad \checkmark$$

$$= 19.69\% // \quad \checkmark$$

✓ 2

✓ 3

Total for Q1: /15

Total for Q2: /5

Total for clue 1: /20