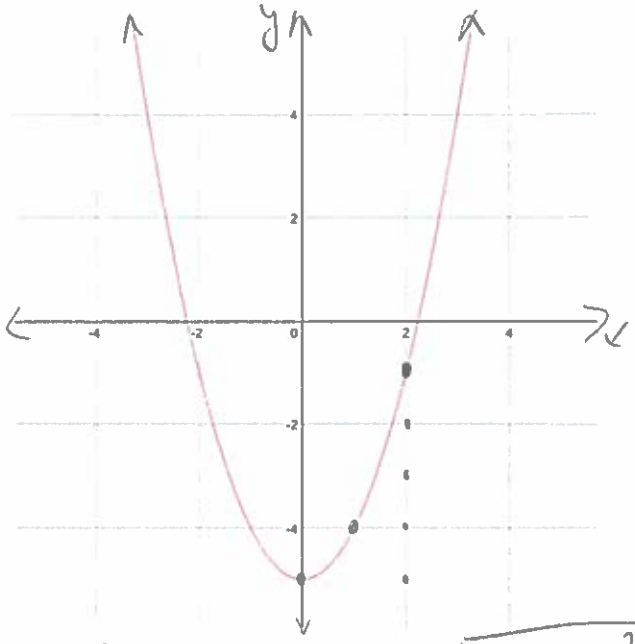
PRE-CALCULUS 11

Finding the Equation of a Quadratic Function from a Graph

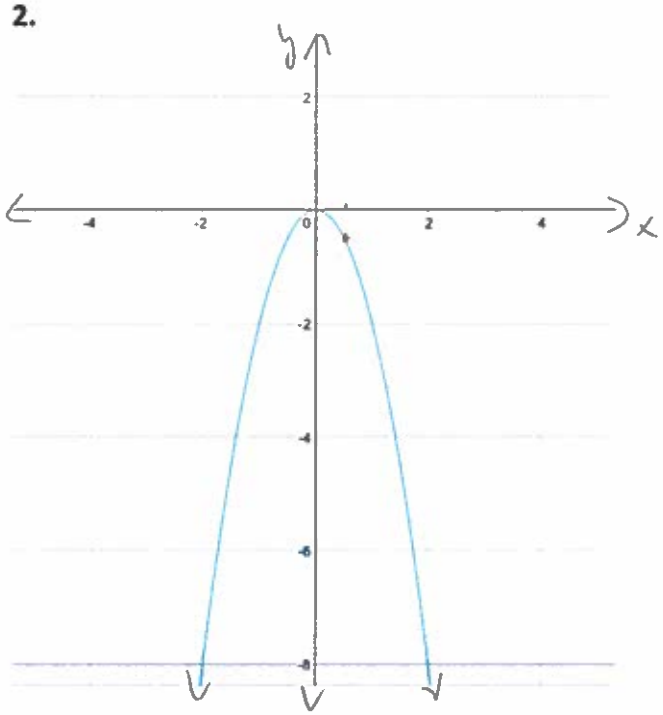
1.



Observations
• vertex $(0,-5)$ ↓ no HT ↓ VT down by 5 • counting from the vertex → right one, up one gives a lattice point → right two, up 4 → point
Equation
⇒ no VS • opens up ⇒ no R in x-axis

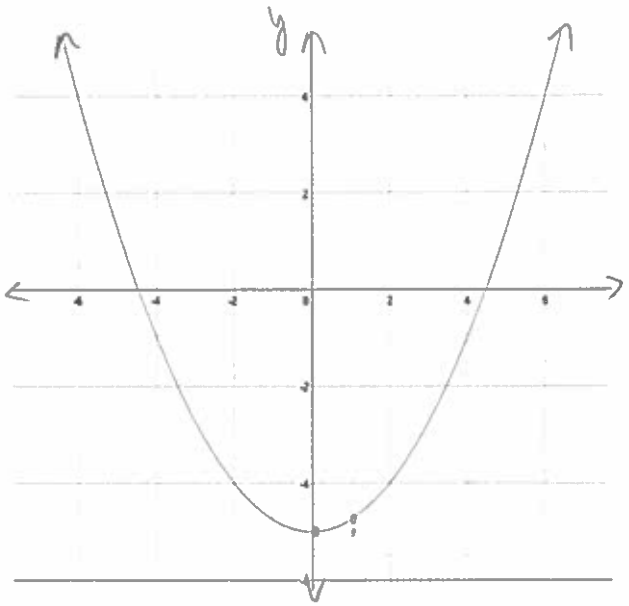
∴ The equation is $\boxed{y = x^2 - 5}$

2.



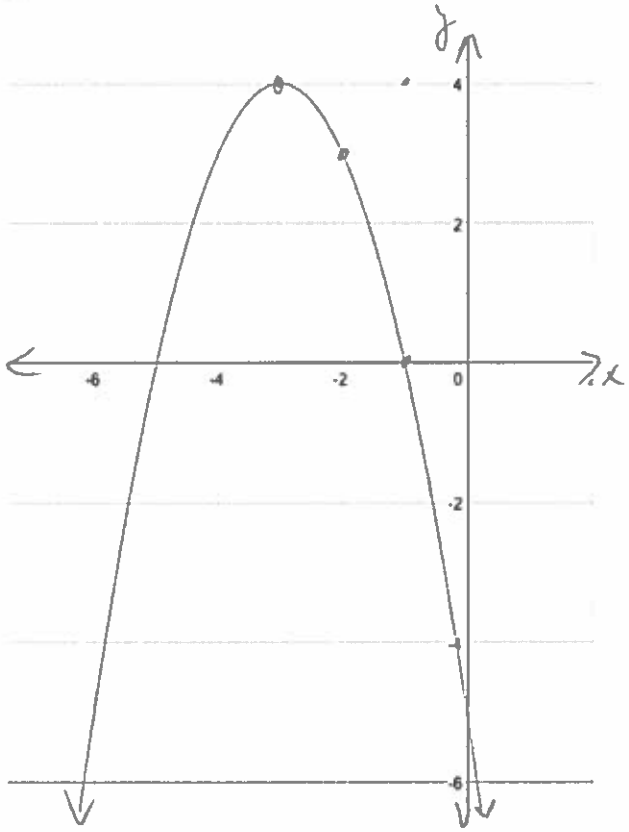
Observations
• opens down ⇒ R- in x-axis • vertex $(0,0)$ ⇒ no HT no VT [right one, down 2 → L point [right two, down 8 → L point $(1,-1) \to (1,-2)$ $(2,-4) \to (2,-8)$ } ⇒ VSE by a factor of 2
Equation
$y = -2x^2$

3.



Observations
• opens up ⇒ no R in x-axis • vertex $(0,-5)$ ⇒ no HT → VT down by 5 units [right one, up $\frac{1}{4}$ } $(1,1) \to (1,\frac{1}{4})$ [right two, up 1 } $(2,4) \to (2,1)$ → VSC by a factor of $\frac{1}{4}$
Equation
$y = \frac{1}{4}x^2 - 5$

4.



Observations
• opens down → R-in x-axis • vertex $(-3,4)$ → VT up by 4 units → HT l/t by 3 units [right one, down one } no VS [right two, down four }
Equation
$y = -(x+3)^2 + 4$

$y = -[x^2 + 6x + 9] + 4$

$= -x^2 - 6x - 5$