GRADE 11

Functions 7

Practical problems.

WEBSITE NOTES

TOPIC:

- Practical problems and applications

MAKE SURE YOU GO THROUGH YOUR GRAPH AND FUNCTION NOTES TO HELP YOU.

Example 1

If (2; 7) is the turning point of $f(x) = -2x^2 - 4ax + k$, find the values of the constants a and k.

Answer

Turning point formula for x-coordinate

$x = \frac{-b}{2a}$

$x = \frac{-(-4a)}{2(-2)} = \frac{4a}{-4} = -a$

Therefore a = -x

x = 2 (Turning Point)

a = -2

Substitute a = -2 and y =7 and x = 2 into f(x)

$f(x) = -2x^2 - 4ax + k$

$7 = -2(2)^2 – 4(-2)(2) + k$

7 = -8 +16 +k

7+8-16 = k

15-16=k

-1 = k

Therefore a=-2 and k=-1

Example 2 (Try yourself) -Past Paper Question

QUESTION 5

Given: $f(x) = \frac{4}{x-3} + 2$ and $g(x) = x + 2$

5.1	Write down the equations of the asymptotes of f.	(2)
5.2	Determine the x-intercept of f.	(3)
5.3	Determine the y-intercept of f.	(2)
5.4	Sketch the graphs of f and g on the same system of axes. Show clearly ALL the intercepts with the axes and any asymptotes.	(5)
5.5	Calculate the x-coordinates of the points of intersection of f and g.	(4)
5.6	If $x < 3$, determine the values of x for which $\frac{4}{x-3} + 2 < x + 2$.	(2)
5.7	The line $y = x - 1$ cuts f at P(1 ; 0) and Q. Write down the coordinates of Q.	(3)
		[21]