Grade 11

Function

Changes and Effect on functions

REFELCTION ABOUT y-AXIS FOR ALL FUNCTIONS

- x-values change signs
- **EXAMPLE 1**
  f(x) = x+3
  REFLECTION ABOUT y-AXIS
  FUNCTION (CALL THE FUNCTION g(x)) NOW BECOMES
  g(x) = (-x)+3
  g(x) =-x+3

TRY EXAMPLE 2

Write down the new function (call it g(x)) if the given function reflected about y-axis

a. $f(x) = x^2 + 4$
b. $f(x) = 3x + 4$
c. $f(x) = \frac{2}{x+4} + 2$
d. $f(x) = 4^{x+3} + 2$

Answers to Example 2

a. $f(x) = x^2 + 4$
REFLECTION ABOUT Y-AXIS
$g(x) = (-x)^2 + 4$
$g(x) = x^2 + 4$

b. $f(x) = 3x + 4$
REFLECTION ABOUT Y-AXIS
$g(x) = 3.(-x) + 4$
$g(x) = -3x + 4$

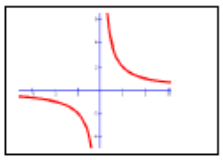
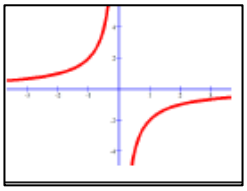
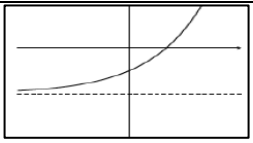
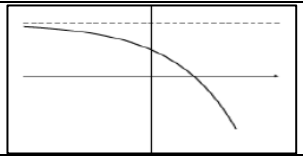
Answers to Example 2

c. $f(x) = \frac{2}{x+4} + 2$
REFLECTION ABOUT Y-AXIS
$g(x) = \frac{2}{(-x)+4} + 2$
$g(x) = \frac{2}{-x+4} + 2$

d. $f(x) = 4^{x+3} + 2$
REFLECTION ABOUT Y-AXIS
$g(x) = 4^{-(x)+3} + 2$
$g(x) = 4^{-x+3} + 2$

SUMMARY

CHANGE and EFFECT

Function	***a>0***	***a<0***	***p increases***	***p decreases***	***q increases***	***q decreases***
$y = f(x) = a(x + p) + q$	*Gradient is positive. Graph slope upwards*	*Gradient is negative. Graph slope downwards*	*Graph moves to left p units*	*Graph moves to right p units*	*Graph moves upwards q units*	*Graph moves downwards q units*
$y = f(x) = a(x + p)^2 + q$	*Graph has a minimum. Graph will be a "HAPPY" face* 	*Graph has a maximum. Graph will be a "SAD" face* 	*Graph moves to left p units*	*Graph moves to right p units*	*Graph moves upwards q units*	*Graph moves downwards q units*
$y = f(x) = \frac{a}{x+p} + q$	*Graph is in 1st and 3rd Quadrant* 	*Graph is in 2nd and 4th Quadrant* 	*Graph moves to left p units*	*Graph moves to right p units*	*Graph moves upwards q units*	*Graph moves downwards q units*
$y = f(x) = ab^{x+p} + q$			*Graph moves to left p units*	*Graph moves to right p units*	*Graph moves upwards q units*	*Graph moves downwards q units*