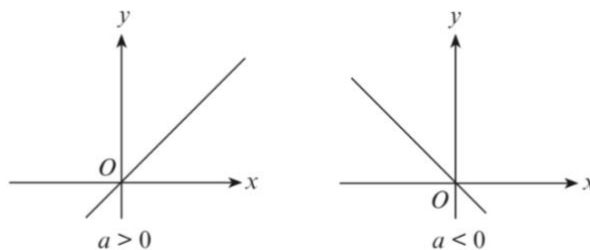


NOTES: CHAPTER 3 FUNCTIONS AND GRAPHS

1. Linear Function

(a) $y = ax$

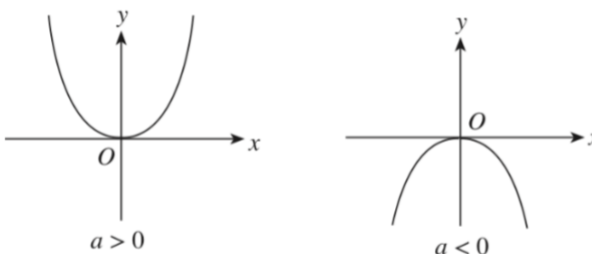


(b) The equation of a straight line is $y = mx + c$
where m = gradient of the straight line
 c = y -intercept

(c) The gradient of the line is $m = \frac{\text{vertical change}}{\text{horizontal change}}$ or $\frac{\text{rise}}{\text{run}}$

2. Quadratic Function

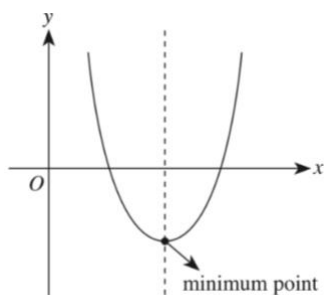
(a) $y = ax^2$



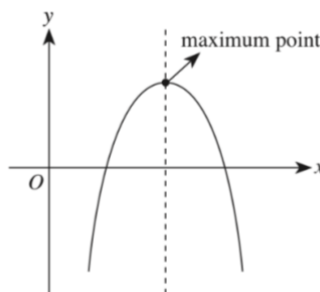
(b) Equation may be in form of

$$y = ax^2 + bx + c \quad \text{or} \quad y = (x - p)^2 + q \quad \text{and} \quad y = (x - h)(x - k).$$

(c) If $a > 0$

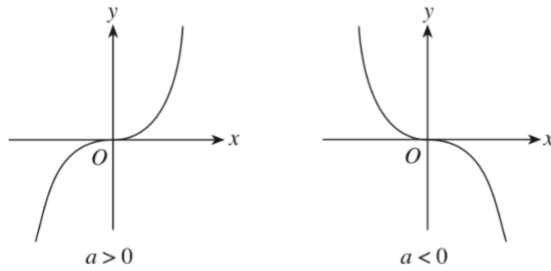


If $a < 0$



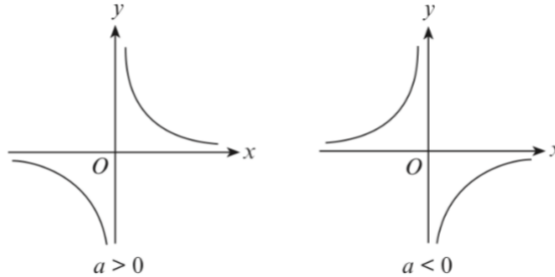
3. Cubic Function

(a) $y = ax^3$



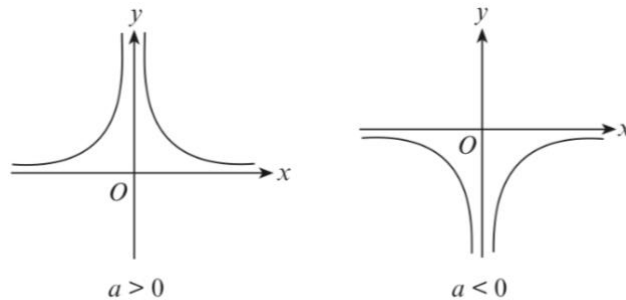
4. Reciprocal Function

(a) $y = a/x$



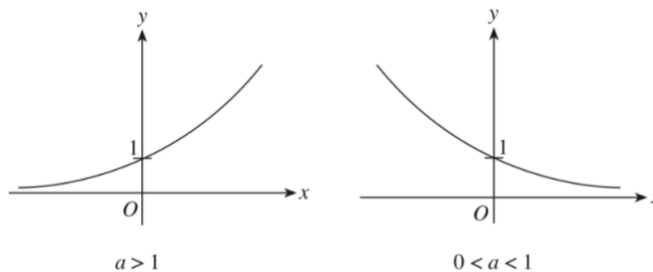
5. Reciprocal Square Function

(a) $y = a/x^2$



6. Exponential Function

(b) $y = a^x$



7. INTERCEPTS

To find the x -intercepts, let $y = 0$.

To find the y -intercepts, let $x = 0$.

8. To find the gradient of the graph at a given point, **DRAW** a tangent at the point and calculate its gradient.

9. Midpoint of a segment: $(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$

10. Distance between two points: $D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$