Hwa Chong Institution 华侨中学
Mathematics (SMTP)

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MA302.4.2 – Standard Graphs

At the end of this unit, you should be able to

- **sketch the twelve standard graphs**
- **use graphs to find number of solutions of equations**

E1. Draw clear sketches of the following standard graphs.

$y = ax^3, \quad a > 0$	$y = ax^3, \quad a < 0$	$y = ax^2, \quad a > 0$
$y = ax^2, \quad a < 0$	$y = ax, \quad a > 0$	$y = ax, \quad a < 0$
$y = \frac{a}{x}, \quad a > 0$	$y = \frac{a}{x}, \quad a < 0$	$y = \frac{a}{x^2}, \quad a > 0$
$y = \frac{a}{x^2}, \quad a < 0$	$y = a^x, \quad a > 1$	$y = a^{-x}, \quad a > 1$

E2. Without solving for x, find the number of solutions to the equation $2^x = x^2$.

P1. Without solving for x, find the number of solutions to the equation $x^5 - \frac{4}{x^2} = 0$.

P2. Without solving for x, find the number of solutions to the equation $(2x-3)^3 = \frac{2}{x-1}$.