HAP 2.2 Graphs, Intercepts, and Symmetry

1. Determine if these points are on the graph of $y = x^3 - 2x + 3$
   (a) $(0, 3)$

   (b) $(-2, 0)$

   (c) $(2, 7)$

2. Find the intercepts of the equations:
   (a) $y = 2x - 1$

   (b) $(x - 2)(x + 5) = 0$

Symmetry

- Symmetric to the x axis: If (x, y) in on the curve, $(x, -y)$ is on the curve.

- Symmetric to the y axis (Even functions): $f(-x) =$
  If (x, y) in on the curve, $(-x, y)$ is on the curve.

- Symmetric to the origin (0,0) (Odd) functions): $f(-x) =$
  If (x, y) in on the curve, $(-x, -y)$ is on the curve.

3. List the x-intercept and the y-intercept and determine the symmetry of the following:
   (a) $y^2 - x - 4 = 0$

   (b) $y = \dfrac{x}{x^2 - 4}$

Answers:
(1a) yes (1b) no (1c) yes (2a) $(\frac{1}{2}, 0)$ and (0, -1) (2b) $(-5, 0), (2, 0)$ and $(0, -10)$
(3a) $(0, 2)$, $(0, -2)$ and $(-4, 0)$; symmetric to the x-axis (3b) $(0, 0)$ symmetric to the origin