

- (1) Give three distinct uses of numbers.
- (2) Explain the difference between a number and a numeral, with examples.
- (3) What is the largest real number x such that $x < 1$?
- (4) Give the interval notation for the set of numbers determined by the following conditions.
 - (a) $-1 \leq x \leq 2.5$
 - (b) $3 < x < 3.2$
 - (c) $3 \leq x < \pi$
 - (d) $\frac{1}{4} < x \leq 1$
 - (e) $x < 7$
 - (f) $x \geq 2.1$
- (5) Find the straight lines satisfying each of the following conditions.
 - (a) slope 5, through the point $(1, 3)$.
 - (b) slope $\frac{1}{2}$, through the point $(-1, 2)$.
 - (c) parallel to $x + 3y = 1$, through $(\frac{1}{2}, 1)$.
 - (d) perpendicular to $y = \frac{2}{5}x + 1$, through $(1, -2)$.
 - (e) through the points $(1, -2)$ and $(3, 1)$.

(6) Sketch the graphs of the following curves.

(a) $y = 1.5x + 1$

(b) $y = -2x + 2$

(c) $y = \frac{1}{x}$

(d) $y = 3^x$

(e) $y = \left(\frac{1}{2}\right)^x$

(7) Solve by completing the square

(a) $x^2 + 4x - 21 = 0$

(b) $x^2 - 2x - 2 = 0$

(c) $x^2 + 6x + 11 = 0$

(8) Factor

(a) $x^2 + 2x - 3$

(b) $x^2 - 7$

(c) $x^2 + 2x - 1$

(d) $x^2 + 5$

(e) $x^2 + 2x + 2$