① (-1, 1)   ② (-12, -10)   ③ (p+a, q+b)

④ (1-3, -2+4) → (-2, 2)

⑤ (r-3, s+4)   ⑥ D

⑦ a) (1,1) → (4,5)   (-1,-1) → (2,3)   (0.5, 2) → (3.5, 6)

b) $5-4 = \dfrac{1}{4-3}$ $3-4 = \dfrac{1}{2-3}$ $6-4 = \dfrac{1}{3.5-3}$

$1 = \dfrac{1}{1}$ $-1 = \dfrac{1}{-1}$ $2 = \dfrac{1}{\frac{1}{2}}$

$1 = 1$ ✓ $-1 = -1$ ✓ $2 = 2$ ✓

⑧ a) $T(x,y) = (x-1, y+3)$

b) $(9,3) = (9-1, 3+3) = (8,6)$

c) $g(x) = \sqrt{x+1} + 3$

⑨ $y = |x+4| + 6$

⑩ a) $T(x,y) = (x+2, y)$

b) on calc

⑪ a) $T(x,y) = (x-2, y+1)$

b) on calc

⑫ a) on calc

b) $x = -3$ $y = -2$
    ↓   ↓
  original Asp,   original Asp
  left 3   down 2

c) $f(x)$: D: $\{x \mid x \neq 0\}$ R: $\{y \mid y \neq 0\}$
   $g(x)$: D: $\{x \mid x \neq -3\}$ R: $\{y \mid y \neq -2\}$

⑬ $h = 5$ $K = -2$ $(-2,2) \to (3,5)$
                                    +5   2

⑭ C

⑮ a) $N = 0.82(1.09)^{107} = \$8,288,000,000,000$