1. **(1)** 3

   (2) $y = 0$ or $y = \dfrac{7}{8}$

   (3) no solution

   (4)   **i.** $y = 0$ or $y = -\dfrac{2}{3}$

       ii. $z = \dfrac{1}{2}$ or $z = -\dfrac{10}{9}$

       iii. $z = -\dfrac{7}{3}$ or $z = \dfrac{1}{3}$

       iv. $x = 1$

   (5) $x \in (-\infty, \infty)$

   (6) $[3, \infty)$

   (7) $z \in (-\infty, \infty)$

   (8) The domain is $(-\infty, 0) \cup (0, \infty)$; the range is $(0, \infty)$

   (9) **

      $[-1, 0)$

2. **(1)** -135

   (2) $z = \dfrac{4}{7}$ or $z = \dfrac{1}{10}$

   (3) $y = -3$ or 1

   (4)   **i.** $y = 0$ or $y = -2$

       ii. $z = 4$ or $z = -\dfrac{1}{9}$

       iii. $z = 2$ or $z = \dfrac{7}{5}$

       iv. $x = \dfrac{9}{5}$

   (5) $w \in (-\infty, 0) \cup (0, \infty)$

   (6) $(0, \infty)$

   (7) $z \in [0, 81) \cup (81, \infty)$

   (8) The domain is $(-\infty, \infty)$; the range is $[5, \infty)$

   (9) **

      $(0, \dfrac{1}{3}]$

3. **(1)** -69

   (2) $y = 0$ or $y = 1$

   (3) $z = 5$ or -2

   (4)   **i.** $z = 0$ or $z = -\dfrac{8}{3}$

       ii. $x = -1$ or $x = \dfrac{5}{2}$

       iii. $y = -1$ or $y = \dfrac{2}{3}$

       iv. $x = -\dfrac{3}{7}$

(5) $z \in (4, \infty)$

(6) $[0, \infty)$

(7) $z \in (-\infty, \frac{1}{12}) \cup (\frac{1}{12}, \infty)$

(8) The domain is $(-\infty, \infty)$; the range is $[0, \infty)$

(9) **

$(-\infty, -\frac{11}{5}) \cup (0, \infty)$

4. (1) 0

(2) $y = 0$ or $y = \frac{5}{3}$

(3) $x = -5$ or -4

(4)　i. $x = 0$ or $x = -\frac{4}{3}$

　　ii. $x = \frac{7}{3}$ or $x = \frac{1}{2}$

　　iii. $x = -\frac{1}{10}$ or $x = -1$

　　iv. $z = \frac{1}{10}$

(5) $w \in [4, \infty)$

(6) $[2, \infty)$

(7) $z \in (-\infty, \infty)$

(8) The domain is $(-\infty, 0) \cup (0, \infty)$; the range is $(-9, \infty)$

(9) **

$(-\infty, 0) \cup (0, \infty)$

5. (1) 132

(2) $x = -\frac{3}{5}$ or $x = -\frac{8}{5}$

(3) $y = 5$

(4)　i. $z = 0$ or $z = -3$

　　ii. $y = 3$ or $y = \frac{1}{2}$

　　iii. $x = -\frac{10}{9}$ or $x = 8$

　　iv. $z = -\frac{1}{4}$

(5) $z \in (0, \infty)$

(6) $[3, \infty)$

(7) $x \in (-\infty, \infty)$

(8) The domain is $[0, \infty)$; the range is $[-3, \infty)$

(9) **

$(0, 4]$