

- T.1
- ①  $(2x+3)(3x-4)$
  - ②  $(x-2)(8x-3)$
  - ③  $(7-2x)(7+2x)$
  - ④  $(4x+9)^2$
  - ⑤  $(x-5)(x+5)(x-4)$
  - ⑥  $3x^3(2x-1)(4x+5)$

T.2

$$\textcircled{7} \quad \frac{5-3x}{4x+2}$$

$$\textcircled{8} \quad \frac{4(x-1)6 + (x+1)(x-1)}{2(x-1)^4 - 3(4)} \rightarrow \frac{24x-24 + x^2 - 1}{8x^4 - 8x^3 - 12} \rightarrow \frac{x^2 + 24x - 25}{8x^4 - 8x^3 - 12}$$

$$\textcircled{9} \quad \frac{3x(x-2) + x(x)}{4(x-2)} \rightarrow \frac{3x^2 - 6x + x^2}{4(x-2)} \rightarrow \frac{4x^2 - 6x}{4(x-2)}$$

$$\frac{2x(2x-3)}{4(x-2)}$$

$$\textcircled{10} \quad \frac{2x}{x+5} \cdot \frac{2}{3x+1} \rightarrow \frac{4x}{(x+5)(3x+1)}$$

T.3

$$\textcircled{11} \quad (-\infty, -8] \quad \textcircled{12} \quad (-3, \infty) \quad \textcircled{13} \quad [2, 35) \quad \textcircled{14} \cup [-1, \infty)$$

T.4

$$\textcircled{15} \quad \mathbb{R} \quad (-\infty, \infty) \quad \textcircled{16} \quad [3, \infty) \quad \textcircled{17} \quad (-\infty, 9]$$

$$\textcircled{18} \quad (-\infty, -5) \cup (-5, \infty) \quad \textcircled{19} \quad (-\infty, -2) \cup (-2, 2) \cup (2, \infty)$$

$$\textcircled{20} \quad (-\infty, -2) \cup (-2, 3) \cup (3, \infty)$$

- T.5
- a)  $2 \log x + 3 \log(x-1)$
  - b)  $2 \log x - 2 \log(3x+2)$
  - c)  $\log x + 4 \log(y+3) - \log y - \log(x-1)$

$$22. \quad \begin{array}{llllll} a) 3 & b) -2 & c) \frac{1}{2} & d) 0 & e) 2 & f) 1 \end{array}$$

$$23. \quad a) \log_{10} x^2 + x - 2 = 1 \quad \begin{aligned} 10 &= x^2 + x - 2 \\ 0 &= x^2 + x - 12 \\ (x+4)(x-3) &= 0 \quad (x+4)(x-3) \\ x &= 3 \end{aligned}$$

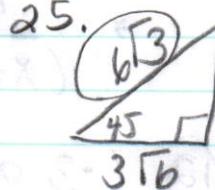
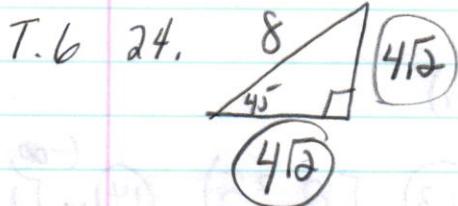
$$b) \log_2 3x = \log_2 5x - 10$$

$$3x = 5x - 10$$

$$10 = 2x \quad x = 5$$

$$c) \log_5 \frac{x+1}{x-1} = 2 \quad \begin{aligned} 25 &= \frac{x+1}{x-1} \\ 25(x-1) &= x+1 \\ 25x - 25 &= x+1 \\ 24x &= 26 \\ x &= \frac{13}{12} \end{aligned}$$

$$d) \log_9 x^2 - 2x - 15 = 1 \quad \begin{aligned} 9 &= x^2 - 2x - 15 \\ 0 &= x^2 - 2x - 24 \\ 0 &= (x-6)(x+4) \\ x &= 6 \end{aligned}$$



$$3\sqrt{6} \cdot \sqrt{2} = 3\sqrt{12} = 6\sqrt{3}$$

$$26. \quad \begin{array}{c} 10\sqrt{3} \\ \diagdown \quad \diagup \\ 60^\circ \quad 30^\circ \\ \square \end{array} \quad 5\sqrt{3}$$

$$5\sqrt{3} \cdot \sqrt{3} = 15$$

$$27. \quad \begin{array}{c} 12 \\ \diagdown \quad \diagup \\ 60^\circ \quad 30^\circ \\ \square \end{array} \quad 6\sqrt{3}$$

$$28. \quad \begin{array}{c} 10\sqrt{3} \\ \diagdown \quad \diagup \\ 60^\circ \quad 30^\circ \\ \square \end{array} \quad 15$$

$$\frac{15}{\sqrt{3}} \rightarrow \frac{15\sqrt{3}}{3} \rightarrow 5\sqrt{3}$$