基礎数学

演習問題３-２

問題 1 次の式をなるべく簡単な方法で計算せよ。

(1) $\left(\frac{1}{7}-\frac{5}{9}\right)\times(-63) = -9+35 = 26$

(2) $\left(\frac{3}{11}+\frac{5}{13}\right)\times 429 = \left(\frac{3}{11}+\frac{5}{13}\right)\times 3\times 11\times 13 = (3\times 13+5\times 11)\times 3 = 94\times 3 = 282$

(3) $\left(\frac{5}{3}-\frac{30}{45}\right)\times 1234 = \left(\frac{5}{3}-\frac{2}{3}\right)\times 1234 = 1234$

(4) $24\times 37.5+26\times 37.5 = (24+26)\times 37.5 = 50\times 37.5 = \frac{3750}{2} = 1875$

(5) $997\times 123 = (1000-3)\times 123 = 123000-369 = 122631$

(6) $0.86\times 0.74+0.28\times 0.37 = 0.86\times 0.74+0.14\times 0.74 = (0.86+0.14)\times 0.74 = 0.74$

(7) $32\times 0.5 = 32\times\frac{1}{2} = 16$

(8) $32\times 0.25 = 32\times\frac{1}{4} = 8$

(9) $32\times 0.125 = 32\times\frac{1}{8} = 4$

(10) $\left(\frac{5}{3}-\frac{3}{4}\right)\div 0.125 = \left(\frac{5}{3}-\frac{3}{4}\right)\times 8 = \frac{11}{12}\times 8 = \frac{22}{3}$

問題 2 次の方程式を解け。

(1) $\frac{x}{6}-\frac{x}{2} = 15-2x$　(答) $x = 9$

(2) $\frac{x}{2}+\frac{1}{3}x = x-3$　(答) $\frac{x}{6} = 3$ より、$x = 18$

(3) $\frac{1}{2}-2x = -11-\frac{x}{12}$　(答) $x = 6$

(4) $36-\frac{8x}{9} = 8$　(答) $\frac{8x}{9} = 28$ より、$x = \frac{63}{2}$

(5) $1-\frac{2y}{3}+\frac{3y}{4} = 0$　(答) $1+\frac{y}{12} = 0$ より、$y = -12$

(6) $2+\frac{4}{2x-3} = 8$　(答) $\frac{4}{2x-3} = 6$ だから、$2x-3 = \frac{2}{3}$, $\therefore\ x = \frac{11}{6}$

(7) $\frac{1}{x-1}-\frac{1}{x+1} = \frac{2}{3}$　(答) $\frac{2}{x^2-1} = \frac{2}{3}$, すなわち、$x^2-1 = 3$, $\therefore\ x = \pm 2$

(8) $4(x+2) = \frac{1}{x+2}$　(答) $(x+2)^2 = \frac{1}{4}$, よって、$x+2 = \pm\frac{1}{2}$, ゆえに、$x = -\frac{3}{2},\ -\frac{5}{2}$