

問1

(1)	(ア)	○ ^②	(イ)	×	(ウ)	×	(エ)	○ ^②	(2)	-2, 1 ^②
(3)	解が1つ	7 ^②	解が2つ	1 ^②	(4)	(a)	±9 ^②	(b)	7 ^②	
(4)	(c)	5 ^②	(d)	5 ^②						
(5)	有理数	-0.1, $\sqrt{84}$, $\frac{1}{3}$	無理数	$\sqrt{2}$, $-\frac{\sqrt{2}}{5}$, π	(6)	$0 \times \sqrt{2} = 0$ $\uparrow$ $\pi, \sqrt{3}$				

①点 ①点 ①点

知識
/ 25

問2

(1)	11 ^②	(2)	28 ^②	(3)	$-\frac{1}{15}$ ^②	(4)	56 ^②
-----	-----------------	-----	-----------------	-----	------------------------------	-----	-----------------

技能
/ 8

問3

(1)	$x = 3$ $y = -2$	(2)	① 1 [△] ② I [△]
(3)	(a) $\frac{1}{6}$ [△]	(b)	$\frac{1}{2}$ [△]

技能
/ 6

問4

(1)	$3\sqrt{3}$ ^②	(2)	$\sqrt{6}$ ^②
(3)	$4\sqrt{5}$ ^②	(4)	-3 ^②

技能
/ 8

問5

(1)	$x = \pm\sqrt{3}$ ^②	(2)	$x = 0, 5$ ^②	(3)	$x = -2, -7$ ^②
(4)	$x = \frac{-3 \pm \sqrt{29}}{2}$ ^②	(5)	$x = 3 \pm \sqrt{10}$ ^②	(6)	$x = 8, -1$ ^②
(7)	$x = 1$ ^②				

技能
/ 14

問6

(1)	$n = 2$ ^②	(2)	$n = 21$ ^②	(3)	$n = 0, \pm 3, \pm 4$ ^②
(4)	$4\sqrt{15}$ ^②	(5)	38 ^②		

考え方
/ 10

問7

$0.4\dot{5} = x$ とする
 $100x = 45.4\dot{5}$
 $-) \quad x = 0.4\dot{5}$
 $99x = 45$
 $x = \frac{45}{99} = \frac{5}{11}$
 $A \quad 0.4\dot{5} = \frac{5}{11}$

①点

考え方
/ 4

問8

(1)	$b = \sqrt{2}a$ ^②	(2)	$b = 21.2$ ^②	(3)	$\sqrt{2}a^2$ (cm ²) ^②
-----	------------------------------	-----	-------------------------	-----	---

考え方
/ 6

問9

(1)	中央の自然数 $x+1$ [△]	最も大きい自然数 $x+2$ [△]	
(2)	$x(x+2) = 5(x+1) - 1$ ^②	(3)	4, 5, 6 ^②

考え方
/ 6

問10.

(1)	$6\sqrt{5} > 4\sqrt{10}$ ③
(2)	(ア) $14 + 4\sqrt{10}$ ^② (イ) $>$ ^② (ウ) $>$ ^② (エ) $>$ ^②
(3)	$\sqrt{13} + \sqrt{2} < 3 + \sqrt{6} < \sqrt{7} + 2\sqrt{2}$ ^②

考え方
/ 13

知識理解	技能	考え方
/ 25	/ 36	/ 39
/ 100		

中3数学 前期期末試験対策①

問1 (1) (ア) $x^2 - 3x + 4 = 0$ ○ (イ) $(x+2)(x-3) = x^2 - x - 6$ X
 (イ) $x^2 - 3x = x^2 + 5$ X

$$\begin{pmatrix} x^2 - 3x - x^2 - 5 = 0 \\ -3x - 5 = 0 \text{ (1次方程式)} \end{pmatrix} \begin{pmatrix} x^2 - x - 6 - x^2 = 0 \\ -x - 6 = 0 \text{ (1次方程式)} \end{pmatrix}$$

 (エ) $x^2 - 6 = 0$ ○

(2) $x^2 + x - 2 = 0$ (3) $17 \leq b \leq 3 \dots \text{ア } b^2 - 4ac = 0$
 $(x-1)(x+2) = 0$ $2 \leq b \leq 6 \dots \text{イ } b^2 - 4ac > 0$
 $x = 1, -2$
 $(\rightarrow b^2 - 4ac < 0 \text{ 無実数解})$

(4) (a) ± 9 (b) ± 7 (c) ± 5 (d) ± 5

(5) 有理数 $\dots -0.1, \sqrt{64}, \frac{1}{3}$ 無理数 $\dots \sqrt{2}, -\frac{\sqrt{2}}{5}, \pi$

(6) $0 \times \sqrt{2} = 0$
 有理数 $\times$ 無理数 = 有理数

問2 (1) $6 - (-5)$ (2) $7 \times (-2)$ (3) $\frac{1}{3} - \frac{2}{5} \times 3$ (4) $25a^3b^2 \div 5a^3b$
 $= 6 - (-5)$ $= 7 \times 4$ $= \frac{5}{15} - \frac{6}{15} = -\frac{1}{15}$ $= \frac{5a^3b^2}{5a^3b} = b$
 $= 11$ $= 28$ $= -\frac{1}{15}$ $= 5b$

問3 (1) $\begin{cases} 4x + 3y = 6 \dots \text{①} \\ 2x - y = 8 \dots \text{②} \end{cases}$ (2) ① $a > 0, b > 0$ ② $a < 0, b < 0$
 $\text{①} + \text{②} \times 3$ $\text{②} \times 3$ 代入 $\text{②} \times 3$ 代入
 $4x + 3y = 6$ $2x - y = 8$ $2x - y = 8$
 $+ 6x - 3y - 24$ $6x - 3y - 24$ $6x - 3y - 24$
 $10x = 30$ $10x = 30$ $10x = 30$
 $x = 3$ $x = 3$ $x = 3$
 $y = -2$ $y = -2$ $y = -2$
 $\begin{cases} x = 3 \\ y = -2 \end{cases}$ (3) (a) $\frac{1}{6}$ (b) $\frac{3}{6} = \frac{1}{2}$

問4

(1) $5\sqrt{3} - 2\sqrt{3} = 3\sqrt{3}$ (2) $\sqrt{2} \times \sqrt{3} = \sqrt{6}$ (3) $\frac{20}{\sqrt{5}} - \sqrt{20}$
 $= \frac{20\sqrt{5}}{5} - 2\sqrt{5}$
 $= 4\sqrt{5} - 2\sqrt{5}$
 $= 2\sqrt{5}$
 $= 2\sqrt{6} + 3 - 2\sqrt{5} \times \sqrt{3} - 3 \times 2$
 $= 2\sqrt{6} + 3 - 2\sqrt{15} - 6$
 $= -3$

問5

(1) $x^2 = 3$ (2) $x(x-5) = 0$ (3) $x^2 + 9x - 14 = 0$
 $x = \pm\sqrt{3}$ $x = 0, 5$ $(x+2)(x+7) = 0$
 $x = -2, -7$

(4) $x^2 + 3x - 5 = 0$ (5) $x^2 - 6x - 1 = 0$ (解の公式)
 $x = \frac{-3 \pm \sqrt{3^2 - 4 \times (-5)}}{2}$ $x^2 - 6x = 1$ $x = \frac{6 \pm \sqrt{6^2 - 4 \times (-1)}}{2}$
 $x = \frac{-3 \pm \sqrt{29}}{2}$ $x^2 - 6x + 3^2 = 1 + 3^2$ $x = \frac{6 \pm \sqrt{36 + 4}}{2}$
 $(x-3)^2 = 10$ $x - 3 = \pm\sqrt{10}$ $x = \frac{6 \pm \sqrt{40}}{2}$
 $x = 3 \pm \sqrt{10}$ $x = \frac{6 \pm 2\sqrt{10}}{2}$
 $x = 3 \pm \sqrt{10}$ $x = 3 \pm \sqrt{10}$
 $(x+3)^2 = 3x^2 - 2x + 7$ $x^2 - 6x - 1 = 0$
 $(x+3)^2 = 6x^2 - 4x + 14$ $x^2 - 6x - 1 = 0$
 $x^2 + 6x + 9 - 6x^2 - 4x + 14 = 0$ $x^2 - 6x - 1 = 0$
 $-5x^2 + 10x - 5 = 0$ $x^2 - 2x + 1 = 0$
 $(x-1)^2 = 0$ $x = 1$

問6

$$(1) \sqrt{8n} = \sqrt{2^3 n} = \sqrt{2^2 \times 2 \times n} \quad n=2$$

$$(2) \sqrt{\frac{175n}{3}} = \sqrt{\frac{5^2 \times 7 \times n}{3}} \quad n=7 \times 3 = 21$$

$$(3) \sqrt{25-n^2} \text{ が自然数となる整数 } n \text{ の下から}$$

↑ a 値は 0 以上

↑ 0 以上の整数で OK!!

25 以下の 2 乗の数 $\rightarrow 25, 16, 9, 4, 1$

$25-n^2=25$	$25-n^2=16$	$25-n^2=9$	$25-n^2=4$	$25-n^2=1$
$n^2=0$	$n^2=25-16$	$n^2=25-9$	$n^2=25-4$	$n^2=25-1$
$n=0$	$n^2=9$	$n^2=16$	$n^2=21$	$n^2=24$
	$n=\pm 3$	$n=\pm 4$	$n=\pm \sqrt{21}$	$n=\pm \sqrt{24}$
			$n=\pm \sqrt{21} \times$	$n=\pm 2\sqrt{6} \times$

1 0, $\pm 3, \pm 4$

$$(4) x = \sqrt{5} + \sqrt{3}, y = \sqrt{5} - \sqrt{3} \text{ とき } x^2 - y^2 \text{ の値}$$

$$\begin{aligned} x^2 - y^2 &= (x+y)(x-y) \quad \leftarrow \text{代入} \\ &= (\sqrt{5} + \sqrt{3} + \sqrt{5} - \sqrt{3}) \{ \sqrt{5} + \sqrt{3} - (\sqrt{5} - \sqrt{3}) \} \\ &= 2\sqrt{5} \times (\sqrt{5} + \sqrt{3} - \sqrt{5} + \sqrt{3}) \\ &= 2\sqrt{5} \times 2\sqrt{3} \\ &= 4\sqrt{15} \end{aligned}$$

$$(5) x = 3 + \sqrt{10}, y = 3 - \sqrt{10} \text{ とき } x^2 y^2 - x^2 y^5 \text{ の値}$$

$$\begin{cases} x+y = 3+\sqrt{10}+3-\sqrt{10} = 6 \\ xy = (3+\sqrt{10})(3-\sqrt{10}) = 9-10 = -1 \end{cases}$$

$$\begin{aligned} x^2 y^2 - x^2 y^5 &= x^2 y^2 (x^2 - xy^3) \\ &= (xy)^2 \{ x^2 - (xy)y^2 \} \\ &= (-1)^2 \{ x^2 - (-1)y^2 \} \\ &= x^2 + y^2 \\ &= (x-y)^2 - 2xy \\ &= 6^2 - 2 \times (-1) \\ &= 38 \end{aligned}$$

問7

$$0.45 = x \text{ とする}$$

$$100x = 45.45$$

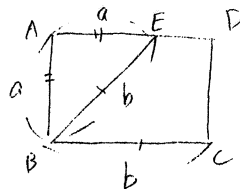
$$\rightarrow x = 0.45$$

$$99x = 45$$

$$x = \frac{45}{99}$$

$$x = \frac{5}{11}$$

問8



$$(1) b = \sqrt{2}a \quad \left(b \text{ は } 1 \text{ の } a \text{ の正整数倍} \right)$$

$$(2) b = \sqrt{2} \times 15$$

$$(3) 2: a:b$$

$$1.41 \times 15$$

$$= 21.15$$

$$= 21.2 \text{ m}$$

$$= a \times \sqrt{2}a$$

$$= \sqrt{2}a^2 \text{ cm}^2$$

問9

(1) 最も小さい自然数 x とすると

中央の数 $x+1$, 最も大きい数 $x+2$

$$(2) (x+2)x = 5(x+1) - 1$$

↑ 最小数 ↑ 中央数 ↑ 最大数

$$(3) x^2 + 2x = 5x + 5 - 1$$

$$x^2 + 2x = 5x + 4$$

$$x^2 + 2x - 5x - 4 = 0$$

$$x^2 - 3x - 4 = 0$$

$$(x+1)(x-4) = 0$$

$$x = -1, 4$$

A 4, 5, 6

問10

$$(1) 8\sqrt{5} \quad 4\sqrt{10}$$

2乗

$$180 > 160$$

$$2 \times 2$$

$$6\sqrt{5} > 4\sqrt{10}$$

$$(2) (3) (2+\sqrt{10})^2$$

$$= 4 + 4\sqrt{10} + 10$$

$$= 14 + 4\sqrt{10}$$

整数部分が同じ

$$(3) (3+\sqrt{6})^2 = 9 + 6\sqrt{6} + 6 = 15 + 6\sqrt{6}$$

$$(1) >$$

$$(\sqrt{7} + \sqrt{2})^2 = 7 + 4\sqrt{14} + 2 = 9 + 4\sqrt{14}$$

$$(3) >$$

$$(\sqrt{3} + \sqrt{5})^2 = 3 + 2\sqrt{15} + 5 = 8 + 2\sqrt{15}$$

$$(1) >$$

線部を比較して

$$(6\sqrt{6})^2 = 216$$

$$(4\sqrt{14})^2 = 224$$

$$(2\sqrt{15})^2 = 104$$

(負の数ではないから) 通分して

$$\sqrt{3} + \sqrt{2} < 3 + \sqrt{6} < \sqrt{7} + 2\sqrt{2}$$