

$$1. = 10x^2 - 4x^2 + 2 - 8x^2 + 3(3x - x^2 + x + 2)$$

$$= 10x^2 - 4x^2 + 2 - 8x^2 + 9x - 3x^2 + 3x + 6$$

$$= -5x^2 + 12x + 8$$

$$2. a = \frac{\sqrt{2}+1}{\sqrt{2}-1} = (\sqrt{2}+1)^2 = 3+2\sqrt{2}$$

$$b = \frac{\sqrt{2}-1}{\sqrt{2}+1} = (\sqrt{2}-1)^2 = 3-2\sqrt{2}$$

$$\therefore a+b = 6$$

$$ab = (3+2\sqrt{2})(3-2\sqrt{2}) = 1$$

$$a^2+b^2 = (a+b)^2 - 2ab$$

$$= 6^2 - 2 \times 1 = 34$$

$$\therefore a^3+b^3 = (a+b)(a^2-ab+b^2)$$

$$= 6(34-1) = 198$$

$$3. (1) 1 = (-2)^2 - 2m(-2) - 2m + 3$$

$$\therefore m = -3$$

$$(2) x = -\frac{b}{2a} \text{ 81) } x = m$$

$$\therefore m = -7$$

$$(3) y = x^2 - 2mx - 2m + 3$$

$$= (x-m)^2 - m^2 - 2m + 3$$

$$\therefore \text{頂点 } (m, -m^2 - 2m + 3)$$

$$\therefore -m^2 - 2m + 3 = 4$$

$$m^2 + 2m + 1 = 0$$

$$(m+1)^2 = 0$$

$$m = -1$$

$$(4) b^2 - 4ac \geq 0 \text{ 81)}$$

$$(-2m)^2 - 4(-2m+3) \geq 0$$

$$m^2 + 2m - 3 \geq 0$$

$$(m+3)(m-1) \geq 0$$

$$\therefore m \leq -3, m \geq 1$$

$$4. (1) 6C_2 = \frac{6 \times 5}{2 \times 1} = 15$$

$$(2) (1, 4), (2, 5), (3, 6)$$

$$\therefore \frac{3}{15} = \frac{1}{5}$$

$$4. (3) 6-1 = 5$$

$$(4) 2-1 = 1$$

$$(5) \frac{5}{15} \times 1 + \frac{4}{15} \times 2 + \frac{3}{15} \times 3 + \frac{2}{15} \times 4 + \frac{1}{15} \times 5$$

$$= \frac{5+8+9+8+5}{15} = \frac{35}{15} = \frac{7}{3}$$

$$5. (1) 100 \div 5 = 20 \leftarrow B$$

$$(2) A \cap B \Rightarrow 15 \text{ の倍数}$$

$$\therefore 100 \div 15 \div 6$$

$$(3) A: 100 \div 3 \div 33$$

$$\therefore 20 + 33 - 6 = 47$$

$$(4) A - A \cap B = 33 - 6 = 27$$

$$6. (1) y = 2(x-3)^2 - 2$$

$$= 2x^2 - 12x + 16$$

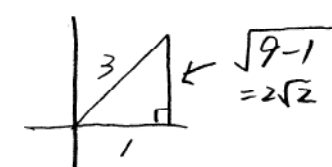
$$(2) (-1)^2 - (k+1) \times (-1) + 2k = 0$$

$$\therefore k = -\frac{2}{3}$$

$$(3) 5C_2 \times 8C_3 = 560$$

$$7. (1) z^2 = 2^2 + 3^2 - 2 \times 2 \times 3 \times \cos \angle BAC$$

$$\therefore \cos \angle BAC = \frac{1}{3}$$

$$(2) \sin \angle BAC = \frac{2\sqrt{2}}{3}$$


$$(3) \frac{a}{\sin A} = \frac{2R}{1} \text{ 81)}$$

$$2R \times \frac{2\sqrt{2}}{3} = 3$$

$$R = 3 \times \frac{3}{4\sqrt{2}} = \frac{9}{4\sqrt{2}} = \frac{9\sqrt{2}}{8}$$

$$(4) S = \frac{1}{2} \times \cancel{2} \times \cancel{2} \times \frac{2\sqrt{2}}{\cancel{2}} = 2\sqrt{2}$$

$$(5) AD = x \text{ 81)}$$

$$z^2 = 2^2 + x^2 - 2 \times 2 \times x \times \frac{1}{3}$$

$$0 = x^2 - \frac{4}{3}x$$

$$0 = x(x - \frac{4}{3}) \therefore x = 0, \frac{4}{3}$$

$$\therefore x > 0 \text{ 81) } x = \frac{4}{3}$$