

التمرين الأول

$$A_3 = 1 \div \left(\frac{-15-12}{20} \right)$$

$$A_3 = 1 \div \left(\frac{27}{20} \right)$$

$$A_3 = 1 \times \left(-\frac{20}{27} \right)$$

$$\boxed{A_3 = -\frac{20}{27}}$$

$$A_2 = \cancel{1} - \frac{2}{3} + \frac{4}{3} - 1 + \frac{4}{3} - \frac{3}{4} - \cancel{1} + \frac{5}{3} - \frac{1}{4}$$

$$A_2 = \frac{-2+4+4+5}{3} + \frac{-3-1}{4} - 1$$

$$A_2 = \frac{11}{3} - 1 - 1$$

$$A_2 = \frac{11-3-3}{3}$$

$$\boxed{A_2 = \frac{5}{3}}$$

$$A_1 = 3 \times \frac{5}{6} - \frac{4}{3} \times 6 + \frac{2}{3}$$

$$= \frac{5}{2} - 8 + \frac{2}{3}$$

$$= \frac{15}{6} - \frac{48}{6} + \frac{4}{6}$$

$$\boxed{A_1 = -\frac{29}{6}}$$

$$A_5 = \frac{\frac{4}{2}}{\frac{3}{2}} \div \frac{\frac{8}{7}}{\frac{6}{7}} \times \frac{\frac{17}{14}}{\frac{9}{14}} \div \frac{\frac{17}{24}}{\frac{2}{3}}$$

$$A_5 = \frac{\cancel{4}}{\cancel{2}} \times \frac{\cancel{2}}{\cancel{7}} \div \frac{\cancel{8}}{\cancel{7}} \times \frac{\cancel{7}}{\cancel{6}} \times \frac{17}{9} \times \frac{\cancel{2}}{14} \div \frac{17}{2} \times \frac{\cancel{2}}{\cancel{24}}$$

$$A_5 = \frac{2}{1} \times \frac{1}{1} \div \frac{4}{1} \times \frac{1}{3} \times \frac{17}{3} \times \frac{1}{14} \div \frac{17}{2} \times \frac{1}{8}$$

$$A_5 = 2 \div \frac{4}{3} \times \frac{17}{42} \div \frac{17}{16}$$

$$A_5 = \cancel{2} \times \frac{\cancel{2}}{\cancel{4}} \times \frac{\cancel{17}}{\cancel{42}} \times \frac{\cancel{16}}{\cancel{17}}$$

$$A_5 = 1 \times \frac{1}{1} \times \frac{1}{7} \times \frac{4}{1}$$

$$\boxed{A_5 = \frac{4}{7}}$$

$$A_4 = \left(\frac{36}{60} - \frac{40}{60} + \frac{45}{60} \right) \div \left(\frac{-5}{6} + \frac{4}{6} \right)$$

$$A_4 = \frac{41}{60} \div \left(-\frac{1}{6} \right)$$

$$A_4 = \frac{41}{\cancel{60}} \times (-\cancel{6})$$

$$A_4 = -\frac{41}{10}$$

$$\boxed{A_4 = -4.1}$$

التمرين الثاني

أحسب

$$M = 5a - 2b + 4 - a - 4b + 5 - 28$$

$$M = 4a - 6b + 9 - 28$$

$$M = 4a - 6b - 19$$

$$M = 2(2a - 3b) - 19$$

$$M = 2 \times 10 - 19$$

$$M = 20 - 19$$

$$\boxed{M = 1}$$

التمرين الثالث

أبسط

$$B = \frac{a}{a-b} + \frac{b}{a+b} + \frac{a^2+b^2}{a^2-b^2}$$

$$B = \frac{a(a+b) + b(a-b)}{a^2-b^2} + \frac{a^2+b^2}{a^2-b^2}$$

$$B = \frac{a^2+ab+ab-\cancel{b^2}+a^2+\cancel{b^2}}{a^2-b^2}$$

$$B = \frac{2a^2+2ab}{a^2-b^2}$$

$$B = \frac{2a(\cancel{a+b})}{(\cancel{a+b})(a-b)}$$

$$\boxed{B = \frac{2a}{a-b}}$$

$$A = \left(\frac{1}{a+2} + \frac{1}{a-2} \right) \times \frac{a^2-4}{2a}$$

$$A = \frac{a-\cancel{2}+a+\cancel{2}}{\cancel{a^2-4}} \times \frac{\cancel{a^2-4}}{2a}$$

$$A = \frac{2a}{2a}$$

$$\boxed{A = 1}$$

التمرين الرابع

أنشئ

$$C_2 = x^3 - 2x^2 + 5x - 3x^3 - 3x^2 + 15x$$

$$\boxed{C_2 = -2x^3 - 5x^2 + 20x}$$

$$C_4 = \cancel{-10x} + 6x^2 - 15 - 9x - 20x^2 + 4x - 2 + \cancel{10x}$$

$$\boxed{C_4 = -14x^2 - 5x - 17}$$

$$C_1 = 10x - 6 - 24x + 30 - 30x - 35$$

$$\boxed{C_1 = -44x - 11}$$

$$C_3 = \cancel{x} - \cancel{x^2} + 6x^2 \cancel{-x} + 2x^2 + \cancel{x^2}$$

$$\boxed{C_3 = 8x^2}$$

$$C_5 = (a - 2b + 3c)(-2a + 3b + 4c)$$

$$C_5 = -2a^2 + 3ab + 4ac + 4ab - 6b^2 - 8bc - 6ac + 9bc + 12c^2$$

$$\boxed{C_5 = -2a^2 + 7ab - 2ac - 6b^2 + bc + 12c^2}$$

$$C_7 = (2x-3)^2(2x+3)^2$$

$$C_7 = ((2x-3)(2x+3))^2$$

$$C_7 = (4x^2-9)^2$$

$$C_7 = 16x^2 - 72x + 81$$

$$C_9 = \left(\frac{a}{3} - \frac{b}{2}\right)\left(\frac{a}{3} + \frac{b}{2}\right)\left(\frac{a^2}{9} + \frac{b^2}{4}\right)$$

$$C_9 = \left(\frac{a^2}{9} - \frac{b^2}{4}\right)\left(\frac{a^2}{9} + \frac{b^2}{4}\right)$$

$$C_9 = \frac{a^4}{81} - \frac{b^4}{16}$$

$$C_6 = (5a-2)^2 + (a+4)^2 + (a+2)(a-2)$$

$$C_6 = 25a^2 - 20a + 4 + a^2 + 8a + 16 + a^2 - 4$$

$$C_6 = 27a^2 - 12a + 16$$

$$C_8 = \left(3a + \frac{1}{3}\right)^2 + \left(2a - \frac{1}{2}\right)^2 + \left(a - \frac{1}{4}\right)\left(a + \frac{1}{4}\right)$$

$$C_8 = 9a^2 + 2a + \frac{1}{9} + 4a^2 - 2a + \frac{1}{4} + a^2 - \frac{1}{16}$$

$$C_8 = 14a^2 + \frac{43}{144}$$

$$C_{10} = (3x-7a)(3x-7a) + (x+a+4)^2$$

$$C_{10} = (9x^2 - 49a^2) + (x+a)^2 + 2 \times 4(x+a) + 16$$

$$C_{10} = 9x^2 - 49a^2 + x^2 + 2ax + a^2 + 8x + 8a + 16$$

$$C_{10} = 10x^2 - 48a^2 + 2ax + 8x + 8a + 16$$

التمرين الخامس
أعمل

$$D_3 = \frac{4}{9}x^2 - 121$$

$$D_3 = \left(\frac{2}{3}x + 11\right)\left(\frac{2}{3}x - 11\right)$$

$$D_5 = 1 - \frac{81}{25}x^2$$

$$D_5 = \left(1 + \frac{9}{5}x\right)\left(1 - \frac{9}{5}x\right)$$

$$D_1 = 13xy + 39xy^2 - 26y^2$$

$$D_1 = 13y(x + 3xy - 2y)$$

$$D_2 = (3-5x)(2x+1) + (x-1)(3-5x)$$

$$D_2 = (3-5x)(2x+1+x-1)$$

$$D_2 = 3x(3-5x)$$

$$D_6 = (3x-2)^2 - 49$$

$$D_6 = (3x+2-7)(3x+2+7)$$

$$D_6 = (3x-5)(3x+9)$$

$$D_6 = 3(3x-5)(x+3)$$

$$D_4 = (5-3x)(x-2) - (15-9x)(3x+4)$$

$$D_4 = (5-3x)(x-2) - 3(5-3x)(3x+4)$$

$$D_4 = (5-3x)(x-2-9x-12)$$

$$D_4 = (5-3x)(-8x-14)$$

$$D_4 = -2(5-3x)(4x+7)$$

$$D_7 = (3x-1)^2 - (x-5)^2$$

$$D_7 = (3x-1-x+5)(3x-1+x-5)$$

$$D_7 = (2x+4)(4x-6)$$

$$D_7 = 4(x+2)(2x-3)$$

$$D_8 = (25x-35x^2) + (7x-5)$$

$$D_8 = -5x(7x-5) + (7x-5)$$

$$D_8 = (7x-5)(-5x+1)$$

$$D_{10} = 4x^2 - 25 - (2x - 5)(x + 3) + 5 - 2x$$

$$D_{10} = (2x - 5)(2x + 5) - (2x - 5)(x + 3) - (2x - 5)$$

$$D_{10} = (2x - 5)(2x + 5 - x - 3 - 1)$$

$$\boxed{D_{10} = (2x - 5)(x + 1)}$$

$$D_9 = (x - 2)^2 - 9(x^2 + 8x + 16)$$

$$D_9 = (x - 2)^2 - 9(x + 4)^2$$

$$D_9 = (x - 2)^2 - [3(x + 4)]^2$$

$$D_9 = (x - 2 - 3x - 12)(x - 2 + 3x + 12)$$

$$D_9 = (-2x - 14)(4x + 10)$$

$$\boxed{D_9 = 4(-x - 7)(2x + 5)}$$