Exercise 1

$5a^2 \cdot 1.5a^4 - \frac{1}{3}d \cdot 6a^2 + a^3 \cdot (-4a^2) - a^2 \cdot (-a^2) - 12 \cdot (-3) =$

$= 7.5a^6 - 3a^6 - 4a^5 + a^4 + 36 = 7.5a^6 - 2a^6 - 4a^5 + a^4 + 36$ √

Standart form of a polynomial
should be in descending order of degrees

Exercise 2

$3x^3 + 2y + 4$ при $y = 3x^3 + x - 5$

$3x^3 + 2(3x^3 + x - 5) + 4 = 3x^3 + 6x^3 + 2x - 10 = 9x^3 + 2x - 6$ √

Exercise 3

$4x - 1.5x + 7 + 1\frac{1}{7}x = 0$

$2.5 + 7 + 1\frac{1}{7}x + 8 = 0$

$2\frac{1}{2}x + 1\frac{1}{7}x + x = -7$

$2\frac{7}{14} + 1\frac{2}{14}x + x = -7$ $x = 3\frac{9}{14}$
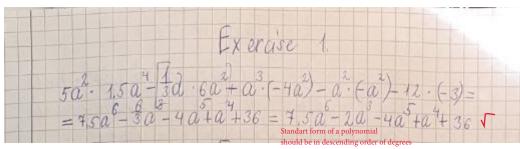
$$4\,x - \frac{3}{2}\,x + 7 + \frac{8}{7}\,x + \_ = 7 \xrightarrow{solve,\_} \frac{-(51\cdot x)}{14}$$

Exercise 4

Exercise 4

$p_1(b) = 12b^4 - 10b^2 + 7$ $\qquad$ $p_2(b) = 1.4b^3 - 5b^4 + b + 1.2$

a) $p(b) = 2(12b^4 - 10b^2 + 7) + 1.4b^3 - 5b^4 + b + 1.2$

$p(b) = 24b^4 - 20b^2 + 14 + 1.4b^3 - 5b^4 + b + 1.2$

$p(b) = 19b^4 + 1.4b^3 - 20b^2 + b + 15.2$ ✓

b) $p(b) = 12b^4 - 10b^2 + 7 - 3(1.4b^3 - 5b^4 + b + 1.2)$

$p(b) = 12b^4 - 10b^2 + 7 - 4.2b^3 + 15b^4 - 3b - 3.6$

$p(b) = 27b^4 - 4.2b^3 - 10b^2 - 3b + ~~7.6~~ \quad 3.4$

Exercise 5

$3a(5ab^3 - 3) + 5a^2b^2(3b - 2a) = 15a(2ab^3 - 1) + 18$

$15a^2b^3 - 9a + 15a^2b^3 - 10a^3b^2 = 30a^2b^3 - 15a + 18$

$30a^2b^3 - 9a - 10a^3b^2 = 30a^2b^3 - 15a + 18$

$-9a + 15a - 10a^3b^2 = 18$

$-10a^3b^2 + 6a = 18 \qquad | \; : 2$

$-5a^3b^2 + 3a = 9$

I did not get the solution but I tried

Exercise 5.

$$3a(5ab^3-3)+5a^2b^2(3b-2a)=15a(2ab^3-1)+18$$

$$15a^2b^3-9a+15a^2b^3-10a^3b^2=30a^2b^3-15a+18$$

$$30a^2b^3-9a-10a^3b^2=30a^2b^3-15a+18$$

$$-9a+15a-10a^3b^2=18$$

$$6a-10a^3b^2=18$$

$$-10a^3b^2+6a=18$$

$$-5a^3b^2+3a=9$$

$$\boxed{a(-5a^2b^2+3)=9}$$

$$\begin{cases} a=3 \\ 3=5(3)^2b^2-9 \end{cases}$$

$$\begin{cases} a=3 \\ -5(3^2)b^2=3 \end{cases}$$

$$\boxed{3-45b^2=9} \cdot 3$$

$$1-15b^2=3$$

$$-15b^2=2 \qquad b^2=-\frac{2}{15} \qquad b=+-\sqrt{\frac{2}{-15}}$$

$$a(6-10a^2b^2)=18 \qquad\qquad b^2=\frac{3}{5}\frac{(a-3)}{a^3}$$

$$a(3-5a^2b^2)=9 \qquad\qquad a\in(-\infty;0)\cup(0;+\infty)$$

$$3a-5a^3b^2=9$$

$$5a^3b^2=3a-9 \qquad\qquad +$$

$$b^2=\frac{3a-9}{5a^3}$$

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

$a = 3$

$$\begin{cases} -5(3)^2 b^2 = 3 \\ -5 \cdot 9 b^2 = 3 \end{cases}$$

$$-45 b^2 = 3$$

$$-15 b^2 = 1$$

$$b^2 = +\frac{1}{15}$$

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

$$(a-b)(a+b)(a+b) =$$

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

$$\left(2 - \frac{3a}{6}\right)\left(2 + \frac{3}{6}\right)^2$$

Exercise 6

Exercise 6.

$$(90-1)^2 = 8100 + 1 - 180 = 7921 = 89^2 \quad \checkmark$$

$$(100+2)^2 = 10000 + 4 + 400 = 10404 = 102^2 \quad \checkmark$$

Exercise 7

Exercise 7

$$(3x+2)(3x-2) - 32 = 9(x-2)^2$$

$$9x^2 - 4 - 32 = 9x^2 - 36x + 36$$

$$9x^2 - 36 = 9x^2 - 36x + 36$$

$$36x = 72$$

$$x = 2 \quad \checkmark$$

Exercise 8

при
$a = \frac{1}{c}$

$(2-3a)(4+6a+9a^2) = (2-3a)(2+3a)^2 = (2-3$ ~~...~~

$= 1.5 \cdot 2.5^2 = 1.5 \cdot 6.25 = \frac{15 \cdot 625}{10 \cdot 100_4} = \frac{75}{8} =$

$= \frac{3}{2} \cdot \frac{25}{4} = \frac{75}{8}$ ✗

$(2-3\,a)\cdot(4+6\,a+9\,a^2) = 2^3 - (3\,a)^3$

$a := \frac{1}{6}$

$2^3 - \left(3 \cdot \frac{1}{6}\right)^3 = 8 - \left(\frac{1}{2}\right)^3 = 8 - \frac{1}{8} = \frac{63}{8}$

Exercise 9

Exercise 9

$(3b+2)^2 + (7+3b)(7-3b) - 12b =$

$= 9b^2 + 12b + 4 + 49 - 9b^2 - 12b =$

$= 53$ ✓