

- steep/gentle - stromy/o łagodnym nachyleniu
- differentiation - różniczkowanie
- with respect to - w odniesieniu do
- dependent (upon) - zależny (od)
- derivative - pochodna
- differentiable - różniczkowalny
- differential calculus - rachunek różniczkowy
- continuity - ciągłość
- continuous - ciągły
- tangent (*also: tangent line*)- styczna (prosta równoległa do wykresu w danym punkcie)
- normal (*also: normal line*)- normalna (prosta prostopadła do wykresu w danym punkcie)
- the chain rule - reguła łańcuchowa
- function composite/composition - złożenie funkcji
- to be plotted - być narysowanym
- slope - nachylenie
- plane geometry - geometria planarna
- curve - krzywa
- higher order derivatives - pochodne wyższych rzędów
- speed - prędkość
- acceleration - przyspieszenie
- notation - notacja
- parenthesis (*pl. parentheses*) - nawias okrągły
- total differential - różniczka
- approximated value - wartość przybliżona
- error - błąd
- neighbourhood - sąsiedztwo
- indeterminate form - wyrażenie nieoznaczone (np. $0^0, \infty - \infty, \infty \cdot 0, \dots$)
- local minimum (*pl. minima*) - lokalne minimum

- local maximum (*pl. maxima*) - lokalne maksimum
- local extremum (*pl. extrema*) - lokalne ekstremum
- first derivative - pierwsza pochodna
- second derivative - druga pochodna
- critical points - punkty podejrzone o istnienie w nich ekstremów
- global - globalny
- concavity - wypukłość
- concave down, concave - wypukły
- concave up, convex - wklęsły
- inflection point - punkt przegięcia
- asymptote - asymptota
- horizontal asymptote - asymptota pozioma
- vertical asymptote - asymptota pionowa
- oblique/slant asymptote - asymptota ukośna
- parallel - równoległy
- perpendicular - prostopadły
- to meet conditions - spełniać warunki
- assumptions - założenia
- denominator - mianownik
- numerator - licznik
- x -intercept - punkt przecięcia z osią OX
- y -intercept - punkt przecięcia z osią OY
- rational function - funkcja wymierna

Exercise 1. Fill the gaps with missing words:

assumptions, chain, constant, continuous, corners, decreases, differentiable, differential, down, exercises, global, minimum, oblique, perpendicular, second, up

- a) Function $|x|$ is _____(1) in its domain, but it is not differentiable in every point.
- b) It is easy to give an example of a function that is not _____(2) in its domain, despite the fact that its graph has no sharp _____(3) - $f(x) = \sqrt[3]{x}$, for instance.
- c) If we calculate a derivative of a _____(4) function, the result will be zero.
- d) The _____(5) rule is not hard, provided that one solves sufficiently many _____(6).
- e) The tangent and the normal line of a function graph at a given point are _____(7) to each other.
- f) _____(8) derivative is used mainly for determining the concavity of a function.
- g) We can use the total _____(9) to approximate values of a function.
- h) Unfortunately, many students use the l'Hospital rule without checking if its _____(10) are met.
- i) If a function _____(11) in a given interval, its first derivative will be negative there.
- j) Words like “_____”(12) derive from Latin, therefore we do not add 's' to create the plural form.
- k) It is crucial to differentiate between local and _____(13) maxima while looking for the largest value of a function in a closed interval.
- l) In Polish, we say “convex” instead of “concave _____(14) ” and “concave” instead of “concave _____(15) ”.
- m) A function may have either a horizontal asymptote or an _____(16) asymptote, but not both at the same time.

Exercise 2. Write synonyms of the following words and phrases:

- a) derivative of n th order - _____
- b) concave - _____
- c) convex - _____
- d) increase - _____
- e) decrease - _____
- f) slant - _____

Exercise 3. Write antonyms of the following words and phrases:

- a) steep - _____
- b) continuous - _____
- c) tangent - _____
- d) convex - _____
- e) approximated - _____
- f) vertical - _____
- g) rational - _____
- h) local - _____

Answers:**Exercise 1.**

- a) (1) *continuous*,
- b) (2) *differentiable*, (3) *corners*,
- c) (4) *constant*,
- d) (5) *chain*, (6) *exercises*,
- e) (7) *perpendicular*,
- f) (8) *second*,
- g) (9) *differential*,
- h) (10) *assumptions*,
- i) (11) *decreases*,
- j) (12) *minimum*,
- k) (13) *global*,
- l) (14) *up*, (15) *down*,
- m) (16) *oblique*.

Exercise 2.

- (a) *nth derivative*,
- (b) *concave down*,
- (c) *concave up*,
- (d) *rise*,
- (e) *fall*,
- (f) *oblique*.

Exercise 3.

- (a) *gentle*,
- (b) *discontinuous*,
- (c) *normal*,
- (d) *concave or concave down*,
- (e) *exact*,
- (f) *horizontal*,
- (g) *irrational*,
- (h) *global*.