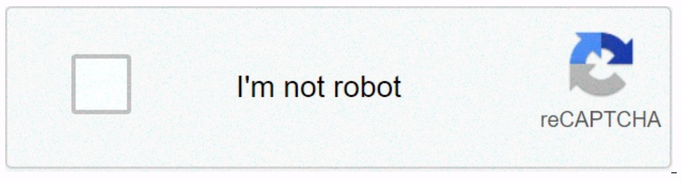

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Читографія Це проект шпаргалки. Це робота, яка триває і ще не закінчена. b²-4ac > 02 real rootsb²-4ac = 01 repeated rootb²-4ac < 02 imaginary roots supplementary anglesadd up to 180°complementary anglesadd up to 90° a=bc=a√2 or b√2c/√2=a or b when a triangle's 3 angles are 30°, 60°, and 90° a = long leg b = short leg c = hypotenuse sineopposite/hypotenusecosineadjacent/hypotenusetangentopposite/adjacent cosecanthypotenuse/oppositesecanthypotenuse/adjacentcotangentadjacent/opposite areaπr²diameter2rcircumference2πr OR πdarc lengthθrr = radius d = diameter θ = angle degrees to radiansθ·π/180radians to degreesθ·180/π sinycosxtany/xcsc1/ysec1/xcotx/yfor tan & cot, only use the tops of the fractions aamplitude changebperiod changechorizontal change: + = left, - = rightdvertical change: + = up, - + down-sin(x)reflection across x-axissin(-x)reflection across y=axis amplitudeverticalperiodhorizontalboth always positive tan, cos, sec, cot: no amplitude csc(x) = 1/sin(x) restricting range : зазвичай і & IV, за винятком cos⁻¹: I & II sin| = 1/csc|csc| = 1/sinυcos| = 1/secusec = 1/cos|tan| = 1/cot|cot| = 1/tan| tan| = sin|/cos|cot| = cos|/sinυ sin² + cos² = 1tan² = 1 = sec² = cos² = csc² = sin2| = 2sin|cosγtan2υ = 2tan| / 1-tan² = cosυ² - sin²υ cos2| = 1 - 2sin² = cos2 = 2cos² - 1 sin(a+b) = sin(a)cos(b) + cos(a)sin(b)sin(a-b) = sin(a)cos(b) - cos(a)sin(b)cos(a+b) = cos(a)cos(b) - sin(a)sin(b)cos(a-b) = co (a)cos(b) + sin(a)sin(b)tan(a+b) = tan(a)+tan(b) / 1-tan(a)tan(b) tan(a-b) = tan(a)+tan(b) / 1+tan(a)tan(b) math school trigonometry Ми компенсуємо наше використання вуглецю за допомогою Ecologi. Натисніть на посилання нижче, щоб допомогти нам! ;> 2 Сторінки //media.cheatography.com/storage/thumb/sapphicpenguin_trigonometry.750.jpg Завантаження почнеться автоматично в 5 Seconds.Close © 2005 Пол Докінз Trig Чит лист Визначення Trig функції Правий трикутник визначення Для цього визначення ми припускаємо, що 02 p q < < або 090 q ° < < ° . oppositesinhypotenuse q = hypotenusecscopposite q = adjacentcoshypotenuse q = hypotenusesecadjacent q = oppositetanadjacent q = adjacentcotopposite q = Визначення кола одиниці Для цього визначення q є будь-який кут. sin1 y y q = 1csc q = cos1 x q = 1sec q = tan x q = cot x y q = Факти та властивості домену Домен - це всі значення q, які можуть бути підключені до функції. sin q , q може бути будь-яким кутом cos q , q може бути будь-який кут загар q , 1,0,1,2,2 nn q q æ æ ö¹ + = ± ±ç ÷è ø K csc q , ,0,1,2, nn q q p ¹ = ± ± K sec q , nn q p æ ö¹ + = ± ±ç ÷è ø K cot q , ,0,1,2, nn q p ¹ = ± ± K Діапазон всі можлив зіначення, uоб вийти з функціu. 1sin1 q - £ £ csc1andcsc1 q q ³ - 1cos1 q - £ sec1andsec1 q q q ³ - tan q < < ¥ cot q -¥ < < ¥Період функціu - це число, T , таке, uго ( ) ( ) fTf q q = = . Отже, якuго w u фіксованим числом, а q будь-який кут у нас u наступні періоди. ( ) sin wq ® 2 T p w = ( ) cos wq ® 2 T p w = ( ) tan wq ® T p w = ( ) csc wq ® 2 T p w = ( ) sec wq ® 2 T p w = ( ) cot wq ® T p w = q прилеглі протилежні гіпотенузи у x, q x y 1 © 2005 Пол Докінз Формули та ідентичності Тангенс iКотангент ідентичності sincostancotcossin q q q q q q = = Взаuмні ідентичності1 csinsincsc11seccoscossec11cottantancot q q q q q q q q = == == == = Піфагорські ідентичності 222222 syncos1sec1sec1cotcsc q q q q q q + =+ = Парні / непарн і формули ( ) ( ) ( ) ( ) ( ) ( ) sincscoscossecsectancotcot q q q q q q q q q q q q q q q q q q q - = = = = = = = = = = = - Періодичні формули Якко n uг цілим числом. ( ) ( )( ) ( )( ) ( ) sin2sincsc2csccos2cossec2sectantancotcot nnnnnn q p q q p q q p q q p q q p q q p q + = + =+ = + =+ = + = Double Angle Formulas ( )( )( ) 22222 sin22sincoscos2cossin2cos112sin2tantan21tan q q q q q q q q q q q q == -= -= -=- Degrees to Radians Formulas If x is an angle in degrees and t is an angle in radians then 180and 180180 txt tx x p p p = Þ = = Half Angle Formulas (alternate form) ( ) ( ) ( ) ( ) ( )( ) 222 1cos1sinsin1cos22221cos1coscos1cos22221cos1costantan21cos1cos2 q q q q q q q q q q q q q -= ± = -+= ± = +--= ± =+ + Sum and Difference Formulas ( )( )( ) sinsincossincoscossinsintantantan1tantan a b a b a b a b a b a b a b a b a b ± = ±± =±± = mm Product to Sum Formulas ( ) ( )( ) ( )( ) ( )( ) ( ) 1sinsincos21coscoscoscos21sincossinsin21cossinsinsin2 a b a b a b a b a b a b a b a b a b a b a b a b a b = - - +é ùë û= - + +é ùë û= + + -é ùë û= + - -é ùë û Sum to Product Formulas sinsin2sincos22sinsin2cossin22coscos2coscos22coscos2sinsin22 a b a b a b a b a b a b a b a b a b a b a b + -æ ö ö+ = ç ÷ ç ÷è ø è ø+ -æ ö ö- = ç ÷ ç ÷è ø è ø+ -æ ö ö+ = ç ÷ ç ÷è ø è ø+ -æ ö æ ö- = - ç ÷ ç ÷è ø è ø Cofunction Formulas sincosco 22csccsccsc22tancotcottan22 p q q q q q q q q q q q q q q æ æ æ ö- = = =ç ÷ ç ÷ è ø øæ ö ö ö- = - =ç ÷ ç ÷è ø øæ ö ö ö- = - =ç ÷ ç ÷ø ø ø ø ø ø © 2005 Пол Докінз Unit Circle Для будь-яко заu мовленоu пари на колі пристроё ( ) , y : cos q = i sin y q = Приклад 5153cossin3232 p p æ ö ö ö= -ç ÷ ç ÷è ø ø 3 p 4 p 6 p 22.22 æ öç ÷ç ÷è ø 31.22 y e æ öç ÷ç ÷è ø 13.22 æ öç ÷ç ÷è ø 60 ° 30 ° 30 ° 23 p 34 p è ø 56 p 76 p 54 p 43 p 116 p 74 p 53 p 2 p 32 p 0 2 p 13.22 æ ö-ç ÷è ø 22.22 æ ö-ç ÷è ø 31.22 æ ö-ç ÷è ø 31.22 æ ö- - - ç ÷è ø 22.22 æ ö- -ç ÷è ø 13.22 æ ö- -ç ÷è ø 31.22 10æ ö-ç ÷ ÷è ø 22.22 æ ö-ç ÷è ø 13.22 æ ö-ç ÷è ø ( ) 0,1 ( ) 0.1 - ( ) 1.0 - 90 ° 120 ° 135 ° 150 ° 180 ° 210 ° 225 ° 240 ° 27 0° 300°315°330°360°0°x September 14, 2020 Read time: 11 minutes Introduction of trigonometry is just a study of triangles - or rather , studying the angles and sizes of triangles. While this sounds quite trivial, trigonometry is a necessary and important part of modern engineering, navigation, design, architecture and other industries. Using trigonometry skills, students can work out the exact angle of the sides of the triangle, the distance between different points of the triangle and other information that is important in a wide variety of settings. Trigonometry cheat sheet is an extremely useful tool for learning this skill. We provide you with a detailed trig cheat sheet as well as a concise PDF with trig crib for your help. Special right triangles There are two special right triangles that will constantly appear throughout the study of mathematics: triangle 30 60 90 and triangle 45 45 90. The specialty of these triangles is that they provide accurate answers instead of decimal approximations when using trigonometry functions. This page will deal with special right triangles: triangles 45°-45°-90° and triangles 30°-60°-90°. How to solve special right triangles. Some examples of Pythagor Triinyat: 3-4-5 triangles, triangle 5-12-13 45 45 90 Triangle Our first observation is that the triangle 45-45-90 is an isossel right triangle. This tells us that if we know the length of one of the legs, we will know the length of the other leg. This will reduce our work when trying to find the sides of the triangle. Remember that the isosceles triangle has two congroente sides and congrocent corners of the base (in this case 45º and 45º). Congruent 45 45 90 triangles are formed when diagonal in square. Remember that the square contains 4 straight corners and its diagonal of the bisections of the corners. If the side of the square is set to a length of 1 unit, the Pythagoras theorem will find the length of the diagonal to be units. Now the lengths of the sides of the triangle 45 45 90 are in a ratio of 1:1:√2. This implies the right triangle with two sides of the same length should be a triangle of 45-45-90. You can also see the triangle 45-45-90 at angles. The right triangle with an angle of 45° should be a special right triangle 45 45 90. : Side2: Hypotenuse = x: x: x√2 Find the length of the hypotenuse of the right triangle if the length of the other two sides is both 3 inches. Solution: Step 1: This is a right triangle with two equal sides, so it should be a triangle of 45 ° -45 ° -90 ° . Step 2: You get that both sides 3. If the first and second value of x:x:x√2 is 3, the third-party length is 3√2. The hypotenuse is 3√2 inches long. 30 60 90 Triangle Another type of special right triangle is triangle 30 60 90. This is the right triangle, the corners of which are 30-60-90. The length of the sides of the triangle is 30 60 90 in a ratio of 1:√3:2. You can also recognize the triangle 30-60-90 in the corners. As long as you know that one of the angles in the triangle of the right corner is either 30 ° or 60 °, then it should be 30 60 90 special right triangle. Side1: Side2: Hypotenuse = x: x√3: 2x Did you know that these 30-60-90 ratio rules are useful, but how do you remember? Remember that the rules of the triangle 30-60-90 - is just a matter of remembering the ratio of 1: √3: 2, and knowing that the shortest length of the side is always opposite the shortest angle (30°), and the longest length of the side is always opposite the largest angle (90°). Some people also memorize the ratio, x, 2x, x√3, because the 1, 2, 3 sequence is easy to remember. One precaution to use this trick is to remember that the longest side is actually 2x, not x times √3. Find the hypotense length of the right triangle if the length of the other two sides is 4 inches and 4 inches the root is three. Solution: Step 1: Check the length ratio to see if it matches n:n√2:2n ratio. 4: 4√3: ? = x: x√3: 2x Step 2: Yes, this is a triangle of 30 °-60°-90° for x = 4 Step 3: Calculate third party. 2x = 2 × 4 = 8 Hypotenuse length is 8 inches. What is a Pythagorist trinity? Any group of 3 integer values that satisfies the equation: a2 + b2 = c2 is called Pythagorsky triple. Any triangle that has sides forming pythagorsky triple, should be the right triangle. Here are some examples of Pythagor Troika: 3 4 5 Triangle and 5 12 13 Triangle. Triangle 3-4-5 Triangle A 3-4-5 is a right triangle, the length of which is in a ratio of 3: 4: 5. When you are given the length of both sides of the right triangle, check the length ratio to see if it fits the ratio of 3:4:5. The angles of the triangle are 3 4 5 36,87° and 53,13° and 90 degrees. Side1 : Side2 : Hypotenuse = 3n : 4n : 5n Determine the length of the hypotenuse of the right triangle if the length of the other two sides is 6 inches and 8 inches. Solution: Step 1: Check the length ratio to see if it's ratio 3n: 4n: 5n. 6 : 8 : ? = 3(2) : 4(2) : ? Step 2: Yes, this is triangle 3-4-5 for n=2. Step 3: Calculate third party 5n = 5 × 2 = 10 Hypotenuse length is 10 inches. Triangle 5 12 13 Triangle A 5 12 13 is a triangle with a right angle, the length of which is in a ratio of 5: 12: 13. This is another example of a special right triangle. The angles of the triangle are 5 12 13 22,6°, 67,4°, 90°. 3-4-5 and 5-12-13 are examples of Pythagoor Triple. Usually they are written as (3, 4, 5) and (5, 12, 13). In general, the Pythagorist trinity consists of three positive whole officers such that a2 + b2 = c2. The other two commonly used Pythagor Triples are (8, 15, 17) and (7, 24, 25) Trig formula sheets For a detailed understanding of the trigonometry formula sheet and how to learn trigonometry formulas visit Trigonometry Identities 1 and Trigonometry Identities 2. But here's a list of formulas needed for any crib trigonometry. Basic Trig Formula Sheet There is a 6 trig ratio used to find all different elements in trigonometry. They are also commonly referred to as trigonometric functions. These six trigonometry features are sine, cosine, secant, co-secant, tangent and cotangent. An easy way to remember what these trig functions mean, i.e. the ratio of which sides corresponds to what trigonometric function is to use different mnomonics. Some people have curly black hair of a thick plastered back. S some ↠ Sinus P people ↠ Perpendicular H of ↠ Hypotenuse This gives sinx (S) = Perpendicular (P)/Hypotenuse (H) C curly ↠ Cozine B black ↠ Base H hair ↠ Hypotenuse It gives cosx (C) = Base(B)/Hypotenuse(H) T thick ↠ Tangent P plastered ↠ Perpendicular B back ↠ Base This gives tanx (T) = Perpendicular (P) / Base (B) Using a right-angle triangle as a reference, derivative trigonometry functions or identities: sin δ = Opposite Side/Hypotenuse cos ¦ = Adjacent Side/Hypotenuse tan δ = Opposite side/Adjacent side sec δ = Hypotenuse/Adjacent side cosec δ = Hypotenuse/opposite side crib δ = Adjacent party/Opposite side Mutual identity Mutual identities the following as : cosec δ = 1/sin δ sec δ = 1/cos δ cot δ = 1/tan δ sin ¦ = 1/cosec δ cos ¦ = 1/sec δ tan δ = 1/cotդ Trig Chart Below is a chart of trig values for angles , which are mainly used to solve problems. For a better understanding of the trigonometry table and its study, please visit the trigonometry table. The trigonometry table contains values (sine, cosine, tangent, cotangent, secant, and cosecant) of standard angles. Let's look at the Trig Chart. Angles In degrees 0° 30° 45° 60° 90° 180° 270° 360° In Radians 0° π/6 π/4 π/3 π/2 π 3π/2 2π sin 0 1/2 1/√2 √3/2 1 0 -1 0 cos 1 √3/2 1/√2 1/2 0 -1 0 1 tan 0 1/√3 1 √3 ∞ 0 ∞ 0 cot ∞ √3 1 1/√3 0 ∞ 0 ∞ csc ∞ 2 √2 2/√3 1 ∞ -1 ∞ sec 1 2/√3 √2 2 ∞ -1 ∞ 1 Trig Identities Cheat Sheet Periodicity Identities in Radians These formulas are used to shift the angles by π/2, π, 2π, etc. Їх також називають співфункціональними посвідченнями. sin (π/2 – A) = cos A & cos (π/2 – A) = sin A sin (π/2 + A) = cos A & cos (π/2 + A) = – rpix Грix (3π/2 – A) = – cos A & cos (3π/2 – A) = – rpix Грix (3π/2 + A) = – cos A & cos (3π/2 + B) = rpix Грix (π - A) = rpix A & cos (π - A) = - cos A sin (π + A) = – sin A & cos (π + A) = – cos A sin (0 2π – A) = – sin A & cos (2π – A) = cos A sin (2π + A) = sin A & cos (2π + A) = cos A Всі тригонометричні ідентичності мають циклічний характер. Вони повторюються після цієї періодичності константи. Ця періодичність константи відрізняється для різних тригонометричних ідентичностей. Trigonometric function Identities (in Degrees) sin(90°−x) = cos x cos(90°−x) = sin x tan(90°−x) = cot x cot(90°−x) = tan x sec(90°−x) = csc x csc(90°−x) = sec x Trig sum and difference formulas sin(x+y) = sin(x)cos(y) + cos(x)sin(y) cos(x+y) = cos(x)cos(y) – sin(x)sin(y) tan(x+y) = (tan x + tan y)/ (1−tan x •tan y) sin(x–y) = sin(x)cos(y) – cos(x)sin(y) cos(x–y) = cos(x)cos(y) + sin(x)sin(y) tan(x−y) = (tan x – tan y)/ (1+tan x • tan y) Trigonometry Formulas Involving Double Angle Identities sin(2x) = 2sin(x) • cos(x) = [2tan x/(1+tan2 x)] cos(2x) = cos2(x)–sin2(x) = [(1-tan2 x)/(1+tan2 x)] cos(2x) = 2cos2(x)−1 = 1–2sin2(x) tan(2x) = [2tan(x)]/ [1−tan2(x)] sec (2x) = sec2 x/(2-sec2 x) csc (2x) = (sec x. csc x)/2 Trigonometry Formulas Involving Triple Angle Identities Sin 3x = 3 sin x – 4sin3x Cos 3x = 4cos3x-3cos x Tan 3x = [3tanx-tan3x]/[1-3tan2x] Trigonometry Formulas: Inverse Properties sin-1 (–x) = – sin-1 x cos-1 (–x) = π – sin-1 x tan-1 (–x) = – tan-1 x cosec-1 (–x) = – cosec-1 x sec-1 (–x) = π – sec-1 x cot-1 (–x) = π – cot-1 x How to solve Trigonometry Problems When we try to solve the problems of heights and distances, we should be consider the following: All the objects such as towers, trees,etc. shall be considered as linear for mathematical convenience. Кут висоти або кут западини розглядається з посиланням на горизонтальну лінію. Висота глядача ігнорується, якщо вона не передбачена в проблемі. Наведені нижче кроки допоможуть вирішити проблеми з тригонометрією слова: Крок 1: Ми повинні зрозуміти питання і намалювати Chart. These are the two most important things to do to solve word problems in trigonometry. Step 2: If possible sometimes, we should share this information. Because when we break down this information into smaller steps, we can easily understand them. Step 3: Draw circuits well for almost all word problems in trigonometry. The schemes we draw for this information must be correct. Drawing diagrams for any of this information will provide us with a clear understanding of the statement of the problem. Step 4: Once we begin to clearly understand any specific information and the appropriate scheme is drawn, solving the problems of the word in trigonometry will not feel like a difficult job. Step 5: Once the drawing part is finished, we need to give a title for each chart position using the alphabets (this is well shown in the word problem as follows). Giving names for positions would make it easier for us to identify parts of a chart. Step 6: Now we must use one of three trigonometric ratios (sin, spit and tan) to find an unknown side or angle. Once the scheme is drawn and we translate the English language statement (information) given in question as a mathematical equation, using trigonometry ratios correctly, 90% of the work will be finished. The remaining 10% just get an answer. This is a solution for the unknown. See the example below. An example of a Question Man stands on the ground at a point that is 10m from the pole position. It finds the top of the pole at an angle of 60°. If the height of his ore from ground level is 1.2 m Find the height of the pole.

Solution Step 1: Let's go through and understand this information. From our understanding of the information provided, we can paint below the picture. Step 2: In the image above, we need to give names for each position with alphabets. Human position --- > Pole position --- > B Human eye level --- > E Pole Vertex ---> D Pole Point corresponding to eye level ---> C Now, from the above diagram, pole height - BD. And also, BD =BC+CD In the diagram above, we have AE = BC AE = 1.2 m So, BC = 1.2 m. Step 3: Now our goal is to get the length of the CD. Once the CD is known to us, we can get BD length using BD=BC+CD. Step 4: In the right-angle CDE triangle, the CD is the opposite side, and the EC is adjacent to the side, and this is known to be 10m. Step 5: In the triangle of the right corner of the CDE, we have to find the length of the opposite side (CD), and the known side is the adjacent side (EC= 10m). Step 6: In this problem, we have to use a trigonometry ratio in which we have the opposite side and the adjacent side. Because the length of the adjacent side (EC = 10m) is known and we have to find the length of the opposite (CD). Step 7: We can use trigonometry ratio tanning in this word problem. Because, only in the tan, we have the opposite side and the adjacent side. Now let's see how to find the length of the CD. Step 8: Tan 60° = OPP/adj √3 = CD/EC √3 = CD/10 10√3 = CD 10 ‣ 1.732 = CD 17.32 = CD Step 9: Pole length BD = BC + CD BD = 1.2 + 17.32 BD = 18.52 So the pole length is 18.52 m. Trigonometry Cheat Sheet pdf You can also carry this PDF with the Trig cheat sheet we made up for you. This should cover the basics of all sorts of trigonometry problems. For more practice on trigonometry issues and detailed step-by-step explanations, please visit Trigonometry Problems. Summary trigonometry functions are used to determine the properties of any angle, relationships in any triangle, and graphs of any repeating cycle. Studying trigonometry will help you understand, visualize, and count these relationships and cycles. If you're studying on your own while staying attentive in the classroom, you'll learn basic trigonometry concepts and probably start discovering cycles in the world around you by generalizing all the concepts you've learned so far to create your own Cheatsheet Trigonometry and turn to it for better results. Author: Gargi Shrivastava, Cuemat teacher