COS PreCalculus

Objectives List

The checkboxes on the right side below may be used to help you record student progress. For example, you can record quarterly grades, or you can indicate level of skill development (not yet begun, beginning, developing, mastered).

Lesson	Number	Objective	✔	✔	✔	✔
1	*PC.1*	Define the trigonometric ratios *sine*, *cosine*, and *tangent*				
2	*PC.2.a*	Show the inverse relationship between sine and cosecant				
2	*PC.2.b*	Show the inverse relationship between cosine and secant				
2	*PC.2.c*	Show the inverse relationship between tangent and cotangent				
2	*PC.2.d*	Convert any ratio from fraction form to rounded decimal form				
2	*PC.2.e*	Use the Pythagorean theorem to find the length of the missing side of a right triangle				
3	*PC.3.a*	Find trigonometric ratios for angles that are listed in a table				
3	*PC.3.b*	Find the angle for trigonometric ratios that are listed in a table				
3	*PC.3.c*	Express tangent in terms of sine and cosine				
3	*PC.3.d*	Express cotangent in terms of sine and cosine				
4	*PC.4.a*	Find the measure of the missing side of a right triangle using trigonometric ratios				
5	*PC.5.a*	Use a calculator to find the trigonometric ratios for any angle				
5	*PC.5.b*	Use a calculator to find the angle associated with a trigonometric ratio				
5	*PC.5.c*	Convert DMS to decimal degrees using unit multipliers or conversion factors				
5	*PC.5.d*	Convert decimal degrees to DMS using unit multipliers or conversion factors				
5	*PC.5.e*	State the inverse relationship between trigonometric functions in general and their arc functions				
6	*PC.6.a*	Define *angle of elevation* and *angle of depression*				
6	*PC.6.b*	Model a word problem involving trigonometry with a drawing				

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6	*PC.6.c*	Apply knowledge of trigonometry to solve word problems				
7	*PC.7.a*	Define *initial side*, *terminal side*, and *coterminal*				
7	*PC.7.b*	Explain positive and negative rotation with respect to angles				
7	*PC.7.c*	Identify the quadrant in which the terminal side of an angle lies				
8	*PC.8.a*	Describe the relationship between cofunctions and complementary angles				
8	*PC.8.b*	Find the value of a trigonometric function of negative theta when given the trigonometric function of theta				
9	*PC.9.a*	Prove trigonometric identities				
10	*PC.10.a*	Evaluate trigonometric expressions containing angle measures with reference angles of 0, 30, 45, 60, and 90				
10	*PC.10.b*	Express evaluated trigonometric expressions in simplest exact form				
11	*PC.11.a*	Apply the sum and difference identities to calculate sine, cosine, and tangent ratios for angles				
12	*PC.12.a*	Apply the double and half-angle identities to calculate sine, cosine, and tangent ratios for angles				
13	*PC.13.a*	Apply the law of sines to find missing parts of a triangle				
13	*PC.13.b*	Explain why the law of sines can sometimes give misleading answers				
13	*PC.13.c*	Evaluate the level of reliability of the law of sines in given situations				
13	*PC.13.d*	Explain a strategy for guarding against errors caused by the ambiguity in the law of sines				
14	*PC.14.a*	Apply the law of cosines to find missing parts of a triangle				
15	*PC.15.b*	Convert angle measures from degrees to radians				
15	*PC.15.c*	Convert angle measures from radians to degrees				
16	*PC.16.a*	Plot a point using polar coordinates on a rectangular coordinate system				
16	*PC.16.b*	Convert polar coordinates to rectangular coordinates				
16	*PC.16.c*	Plot a point using polar coordinates on a rectangular coordinate system when the distance is negative				
16	*PC.16.d*	Convert rectangular coordinates to polar coordinates				
16	*PC.16.e*	Present a model that makes intuitive sense of negative angle measures and negative distances in polar coordinates				

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16	*PC.16.f*	Plot points on a polar coordinate system				
17	*PC.17.a*	Rewrite a rectangular equation as a polar equation				
17	*PC.17.b*	Rewrite a polar equation as a rectangular equation				
18	*PC.18.a*	Convert polar and rectanglular coordinates to vector form				
18	*PC.18.b*	Convert vectors to rectangular or polar form				
18	*PC.18.c*	Add two vectors to find a resultant vector				
18	*PC.18.d*	Subtract one initial vector from a resultant vector to find the other initial vector				
18	*PC.18.e*	Model vector addition and subtraction visually				
19	*PC.19.a*	Define the term *function*				
19	*PC.19.b*	Model the concept of a function				
19	*PC.19.c*	State whether a given relation is a function, based on formula or graph				
19	*PC.19.d*	Calculate the value of a function with various inputs				
19	*PC.19.e*	State the domain and range of a function				
20	*PC.20.a*	Evaluate the sum or difference of two functions				
20	*PC.20.b*	Evaluate the product or quotient of two functions				
20	*PC.20.c*	Evaluate a composite function				
21	*PC.21.a*	Rewrite an exponential expression as a logarithmic expression				
21	*PC.21.b*	Rewrite a logarithmic expression as an exponential expression				
21	*PC.21.c*	Give the base 10 log of powers of 10				
21	*PC.21.d*	Read logs from a log table				
21	*PC.21.e*	Find the log of numbers not in the log table, using interpolation				
21	*PC.21.f*	Define the terms *characteristic* and *mantissa*				
21	*PC.21.g*	Explain the meaning of an antilog				

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21	*PC.21.h*	Find the antilog of a number				
21	*PC.21.i*	Solve logarithmic equations				
22	*PC.22.a*	Define natural log as log base e				
22	*PC.22.b*	State the natural logs of 0 and 1				
22	*PC.22.c*	Explain the inverse relationship between e^x and ln(x)				
22	*PC.22.d*	State the rules for ln(xy), ln(x/y) and $\ln(x^a)$				
22	*PC.22.e*	Simplify expressions using the natural log or exponential function				
22	*PC.22.f*	Solve equations using natural log or exponential functions				
23	*PC.23.a*	Graph the function y = sin(x)				
23	*PC.23.b*	Graph the function y = cos(x)				
23	*PC.23.c*	Define the terms *period*, *shift*, *translation*, and *amplitude*				
23	*PC.23.d*	Graph variations of the basic sine and cosine graphs				
23	*PC.23.e*	Determine the equation of a sine or cosine graph				
24	*PC.24.a*	Graph the function y = csc(x)				
24	*PC.24.b*	Graph the function y = sec(x)				
24	*PC.24.c*	Graph variations of the basic cosecant and secant graphs				
24	*PC.24.d*	Define the term *asymptote*				
25	*PC.25.a*	Graph the function y = tan(x)				
25	*PC.25.b*	Graph the function y = cot(x)				
25	*PC.25.c*	Graph variations of the basic tangent and cotangent graphs				
26	*PC.26.a*	Define the terms *sequence*, *arithmetic sequence*, *finite sequence*, *infinite sequence*, and *series*				
26	*PC.26.b*	Determine the common difference in a given arithmetic sequence				
26	*PC.26.c*	Use the formula to find the n^{th} term of a sequence				

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26	***PC.26.d***	Identify the parts of sigma notation				
26	***PC.26.e***	State two formulas for finding the sum of an arithmetic series: one with *d* and the other without				
26	***PC.26.f***	Compute the sum of an arithmetic series				
27	***PC.27.a***	Define a geometric sequence				
27	***PC.27.b***	Define a common ratio				
27	***PC.27.c***	Give the formula for finding the n^{th} term in a geometric sequence				
27	***PC.27.d***	Find the n^{th} term in a geometric sequence				
27	***PC.27.e***	Give the formula for finding the sum of a geometric series				
27	***PC.27.f***	Compute the sum of a geometric series				
28	***PC.28.a***	Solve equations containing absolute value expressions				
28	***PC.28.b***	Solve equations containing radical expressions				
28	***PC.28.c***	Identify equations with no solution				
28	***PC.28.d***	Identify situations that would result in extraneous solutions for equations containing radical or absolute value expressions				
29	***PC.29.a***	Solve inequalities containing absolute value expressions				
29	***PC.29.b***	Graph one-dimensional inequalities containing absolute value expressions				
29	***PC.29.c***	Solve inequalities containing radical expressions				
29	***PC.29.d***	Graph one-dimensional inequalities containing radical expressions				
30	***PC.30.a***	GIve an operational definition of a limit				
30	***PC.30.b***	Identify the parts of an expression containing limit notation				
30	***PC.30.c***	Evaluate limits of a functions shown on graphs				
30	***PC.30.d***	Evaluate limits algebraically				
30	***PC.30.e***	Give an operational definition of right- and left-handed limits				