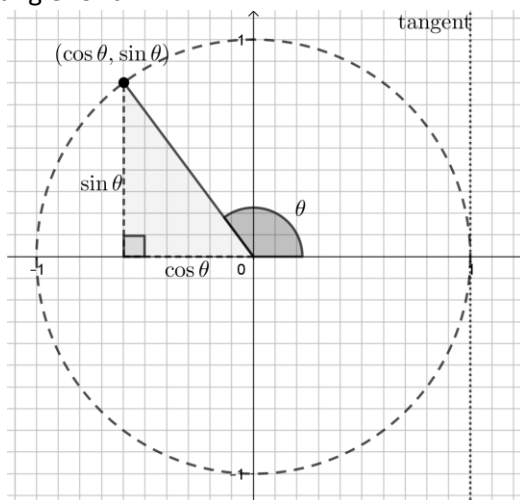


Trigonometry Reference Sheet Grade 11 Precalculus

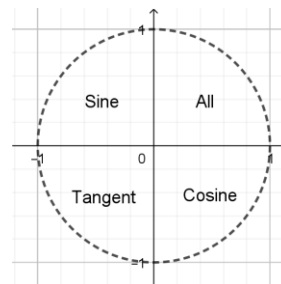
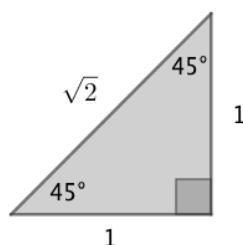
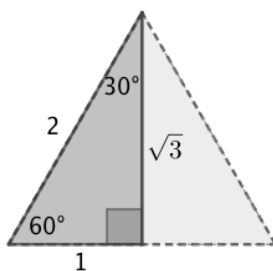
Define sine, cosine, tangent of an angle for $\theta \in \mathbb{R}$



Identities

$\tan \theta = \frac{\sin \theta}{\cos \theta}$	$\sin^2 \theta + \cos^2 \theta = 1$
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Exact Value Triangles; ASTC diagram



SOH CAH TOA, for right angled triangles only

$\sin \theta = \frac{\text{opp}}{\text{hyp}}$	$\cos \theta = \frac{\text{adj}}{\text{hyp}}$	$\tan \theta = \frac{\text{opp}}{\text{adj}}$
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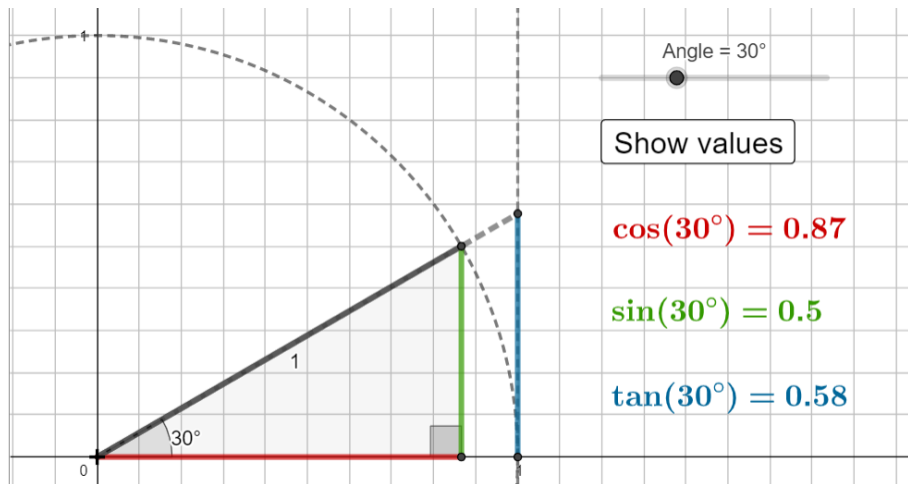
Sine Law, use when an opposite-side/angle pair is given:

$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$	$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$
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Cosine Law, use when SAS is given, or SSS is given:

$a^2 = b^2 + c^2 - 2bc \cos A$	$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$
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TABLE OF TRIG VALUES



	cosine	sine	tangent
0	1	0	0
1	1	0.017	0.017
2	0.999	0.035	0.035
3	0.999	0.052	0.052
4	0.998	0.07	0.07
5	0.996	0.087	0.087
6	0.995	0.105	0.105
7	0.993	0.122	0.123
8	0.99	0.139	0.141
9	0.988	0.156	0.158
10	0.985	0.174	0.176
11	0.982	0.191	0.194
12	0.978	0.208	0.213
13	0.974	0.225	0.231
14	0.97	0.242	0.249
15	0.966	0.259	0.268
16	0.961	0.276	0.287
17	0.956	0.292	0.306
18	0.951	0.309	0.325
19	0.946	0.326	0.344
20	0.94	0.342	0.364
21	0.934	0.358	0.384
22	0.927	0.375	0.404
23	0.921	0.391	0.424
24	0.914	0.407	0.445
25	0.906	0.423	0.466
26	0.899	0.438	0.488
27	0.891	0.454	0.51
28	0.883	0.469	0.532
29	0.875	0.485	0.554
30	0.866	0.5	0.577

	cosine	sine	tangent
31	0.857	0.515	0.601
32	0.848	0.53	0.625
33	0.839	0.545	0.649
34	0.829	0.559	0.675
35	0.819	0.574	0.7
36	0.809	0.588	0.727
37	0.799	0.602	0.754
38	0.788	0.616	0.781
39	0.777	0.629	0.81
40	0.766	0.643	0.839
41	0.755	0.656	0.869
42	0.743	0.669	0.9
43	0.731	0.682	0.933
44	0.719	0.695	0.966
45	0.707	0.707	1
46	0.695	0.719	1.036
47	0.682	0.731	1.072
48	0.669	0.743	1.111
49	0.656	0.755	1.15
50	0.643	0.766	1.192
51	0.629	0.777	1.235
52	0.616	0.788	1.28
53	0.602	0.799	1.327
54	0.588	0.809	1.376
55	0.574	0.819	1.428
56	0.559	0.829	1.483
57	0.545	0.839	1.54
58	0.53	0.848	1.6
59	0.515	0.857	1.664
60	0.5	0.866	1.732

	cosine	sine	tangent
61	0.485	0.875	1.804
62	0.469	0.883	1.881
63	0.454	0.891	1.963
64	0.438	0.899	2.05
65	0.423	0.906	2.145
66	0.407	0.914	2.246
67	0.391	0.921	2.356
68	0.375	0.927	2.475
69	0.358	0.934	2.605
70	0.342	0.94	2.747
71	0.326	0.946	2.904
72	0.309	0.951	3.078
73	0.292	0.956	3.271
74	0.276	0.961	3.487
75	0.259	0.966	3.732
76	0.242	0.97	4.011
77	0.225	0.974	4.331
78	0.208	0.978	4.705
79	0.191	0.982	5.145
80	0.174	0.985	5.671
81	0.156	0.988	6.314
82	0.139	0.99	7.115
83	0.122	0.993	8.144
84	0.105	0.995	9.514
85	0.087	0.996	11.43
86	0.07	0.998	14.301
87	0.052	0.999	19.081
88	0.035	0.999	28.636
89	0.017	1	57.29
90	0	1	undef