T-3 Trig Applications

Use trigonometry to solve each problem. Round missing sides to the nearest tenth, and angles to the nearest degree. Be sure to include a sketch, a trig equation, solving work, and you're your answer with units in a sentence.

1. Suppose you have been assigned to measure the height of a tall Ponderosa pine tree. From a point 47.3 meters from the base of the tree, you find that you must look up at an angle of 53° to see the top of the tree. How tall is the tree?

(5)

2. You lean a 12-foot ladder against a wall. If it reaches 8.7 feet up the wall, what angle does the ladder make with the ground?

(5)

Table of Trigonometric Ratios

Angle Measure	sin	cos	tan	Angle Measure	sin	cos	tan
0	0.000	10000	0.000	46	.7193	.6947	1.036
1	.0175	.9998	.0175	47	.7314	.6820	1.072
2	.0349	.9994	.0349	48	.7431	.6691	1.111
3	.0523	.9986	.0524	49	.7547	.6561	1.150
4	.0698	.9976	.0699	50	.7660	.6428	1.192
5	.0872	.9962	.0875	51	.7771	.6293	1.235
6	.1045	.9945	.1051	52	.7880	.6157	1.280
7	.1219	.9925	.1228	53	.7986	.6018	1.327
8	.1392	.9903	.1405	54	.8090	.5878	1.376
9	.1564	.9877	.1584	55	.8192	.5736	1.428
10	.1736	.9848	.1763	56	.8290	.5592	1.483
11	.1908	.9816	.1944	57	.8387	.5446	1.540
12	.2079	.9781	.2126	58	.8480	.5299	1.600
13	.2250	.9744	.2309	59	.8572	.5150	1.664
14	.2419	.9703	.2493	60	.8660	.5000	1.732
15	.2588	.9659	.2679	61	.8746	.4848	1.804
16	.2756	.9613	.2867	62	.8829	.4695	1.881
17	.2924	.9563	.3057	63	.8910	.4540	1.963
18	.3090	.9511	.3249	64	.8988	.4384	2.050
19	.3256	.9455	.3443	65	.9063	.4226	2.145
20	.3420	.9397	.3640	66	.9135	.4067	2.246
21	.3584	.9336	.3839	67	.9205	.3907	2.356
22	.3746	.9272	.4040	68	.9272	.3746	2.475
23	.3907	.9205	.4245	69	.9336	.3584	2.605
24	.4067	.9135	.4452	70	.9397	.3420	2.747
25	.4226	.9063	.4663	71	.9455	.3256	2.904
26	.4384	.8988	.4877	72	.9511	.3090	3.077
27	.4540	.8910	.5095	73	.9563	.2924	3.271
28	.4695	.8829	.5317	74	.9613	.2756	3.487
29	.4848	.8746	.5543	75	.9659	.2588	3.732
30	.5000	.8660	.5774	76	.9703	.2419	4.010
31	.5150	.8572	.6009	77	.9744	.2250	4.331
32	.5299	.8480	.6249	78	.9781	.2079	4.704
33	.5446	.8387	.6494	79	.9816	.1908	5.145
34	.5592	.8290	.6745	80	.9848	.1736	5.671
35	.5736	.8192	.7002	81	.9877	.1564	6.314
36	.5878	.8090	.7265	82	.9903	.1392	7.115
37	.6018	.7986	.7536	83	.9925	.1219	8.144
38	.6157	.7880	.7813	84	.9945	.1045	9.514
39	.6293	.7771	.8098	85	.9962	.0872	11.73
40	.6428	.7660	.8391	86	.9976	.0698	14.30
41	.6561	.7547	.8693	87	.9986	.0523	19.08
42	.6691	.7431	.9004	88	.9994	.0349	28.64
43	.6820	.7314	.9325	89	.9998	.0175	57.29
44	.6947	.7193	.9657	90	1.000	0.000	undefined
45	.7071	.7071	1.000				