Exercise: express using acute angles.

(1) sin 220°

(2) cos 310°

(3) tan 105°

(4) sin 315°

(5) cos 160°

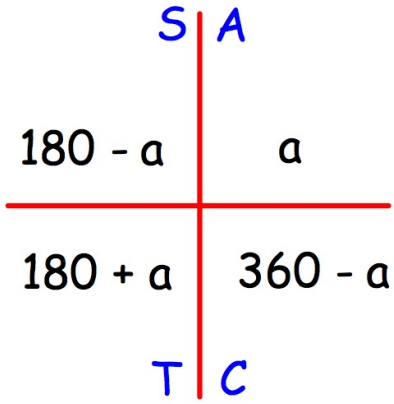
(6) tan 185°

(7) sin 95°

(8) tan 280°

(9) cos 155°

(10) sin 135°



(11) cos 260°

(12) sin 340°

(13) tan 165°

(14) cos 295°

(15) sin 235°

Exercise: find the EXACT values.

(1) sin 120°

(2) cos 210°

(3) tan 135°

(4) cos 315°

(5) sin 225°

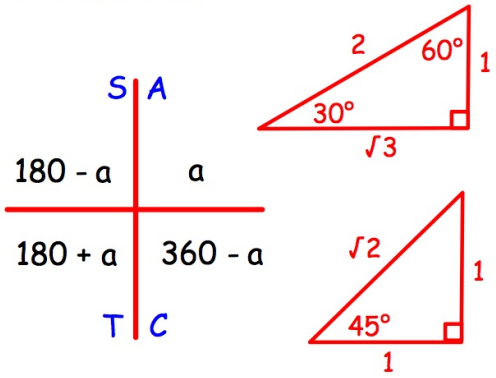
(6) tan 150°

(7) sin 330°

(8) tan 240°

(9) cos 120°

(10) sin 135°



(11) cos 240°

(12) sin 210°

(13) tan 120°

(14) cos 300°

(15) sin 315°

Exercise: find the EXACT values.

(1) $\sin {}^{2\pi}/_{3}$

(2) $\cos {}^{7\pi}/_{6}$

(3) $\tan {}^{3\pi}/_{4}$

(4) $\cos {}^{7\pi}/_{4}$

(5) $\sin {}^{5\pi}/_{4}$

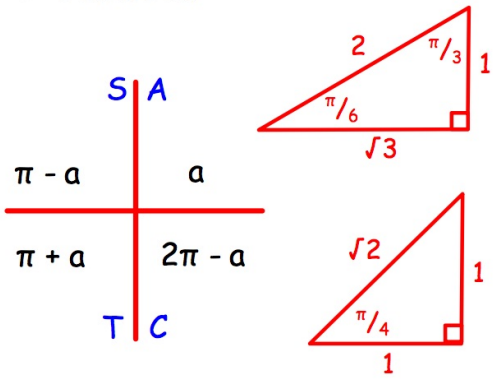
(6) $\tan {}^{5\pi}/_{6}$

(7) $\sin {}^{11\pi}/_{6}$

(8) $\tan {}^{4\pi}/_{3}$

(9) $\cos {}^{2\pi}/_{3}$

(10) $\sin {}^{3\pi}/_{4}$



(11) $\cos {}^{4\pi}/_{3}$

(12) $\sin {}^{7\pi}/_{6}$

(13) $\tan {}^{2\pi}/_{3}$

(14) $\cos {}^{5\pi}/_{3}$

(15) $\sin {}^{7\pi}/_{4}$

(16) $\sin {}^{4\pi}/_{3}$

(17) $\cos {}^{11\pi}/_{6}$

(18) $\tan {}^{7\pi}/_{4}$

(19) $\cos {}^{3\pi}/_{4}$

(20) $\sin {}^{5\pi}/_{3}$

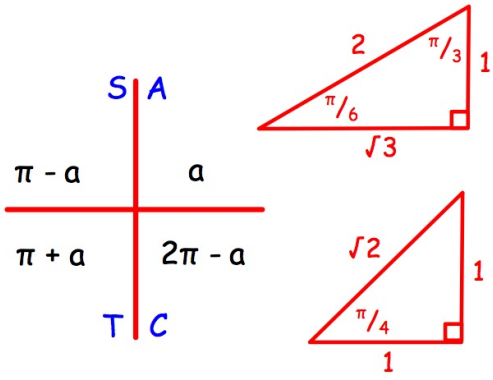
(21) $\tan {}^{7\pi}/_{6}$

(22) $\sin {}^{5\pi}/_{6}$

(23) $\tan {}^{5\pi}/_{3}$

(24) $\cos {}^{5\pi}/_{6}$

(25) $\tan {}^{5\pi}/_{4}$



(26) $\cos {}^{5\pi}/_{4}$

(27) $\tan {}^{11\pi}/_{6}$

Exercise: express using acute angles.

(1) $\sin 220° = -\sin 40°$

(2) $\cos 310° = +\cos 50°$

(3) $\tan 105° = -\tan 75°$

(4) $\sin 315° = -\sin 45°$

(5) $\cos 160° = -\cos 20°$

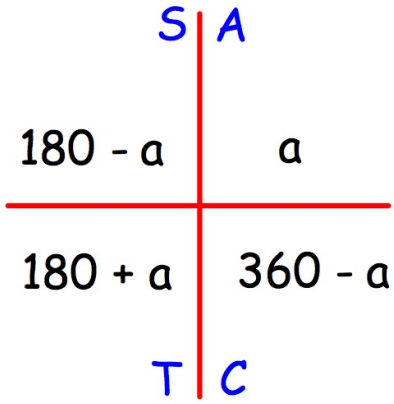
(6) $\tan 185° = +\tan 5°$

(7) $\sin 95° = +\sin 85°$

(8) $\tan 280° = -\tan 80°$

(9) $\cos 155° = -\cos 25°$

(10) $\sin 135° = +\sin 45°$



(11) $\cos 260° = -\cos 80°$

(12) $\sin 340° = -\sin 20°$

(13) $\tan 165° = -\tan 15°$

(14) $\cos 295° = +\cos 65°$

(15) $\sin 235° = -\sin 55°$

Exercise: find the EXACT values.

(1) $\sin 120° = +\sin 60° = +\sqrt{3}/2$

(2) $\cos 210° = -\cos 30° = -\sqrt{3}/2$

(3) $\tan 135° = -\tan 45° = -1$

(4) $\cos 315° = +\cos 45° = +1/\sqrt{2}$

(5) $\sin 225° = -\sin 45° = -1/\sqrt{2}$

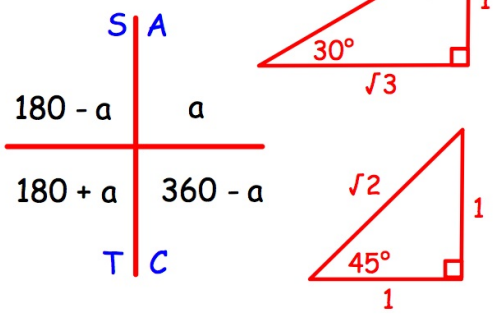
(6) $\tan 150° = -\tan 30° = -1/\sqrt{3}$

(7) $\sin 330° = -\sin 30° = -1/2$

(8) $\tan 240° = +\tan 60° = +\sqrt{3}$

(9) $\cos 120° = -\cos 60° = -1/2$

(10) $\sin 135° = +\sin 45° = +1/\sqrt{2}$



(11) $\cos 240° = -\cos 60° = -1/2$

(12) $\sin 210° = -\sin 30° = -1/2$

(13) $\tan 120° = -\tan 60° = -\sqrt{3}$

(14) $\cos 300° = +\cos 60° = +1/2$

(15) $\sin 315° = -\sin 45° = -1/\sqrt{2}$

Exercise: find the EXACT values.

(1) $\sin {}^{2\pi}/_{3} = +\sin {}^{\pi}/_{3} = +{}^{\sqrt{3}}/_{2}$

(2) $\cos {}^{7\pi}/_{6} = -\cos {}^{\pi}/_{6} = -{}^{\sqrt{3}}/_{2}$

(3) $\tan {}^{3\pi}/_{4} = -\tan {}^{\pi}/_{4} = -1$

(4) $\cos {}^{7\pi}/_{4} = +\cos {}^{\pi}/_{4} = +{}^{1}/_{\sqrt{2}}$

(5) $\sin {}^{5\pi}/_{4} = -\sin {}^{\pi}/_{4} = -{}^{1}/_{\sqrt{2}}$

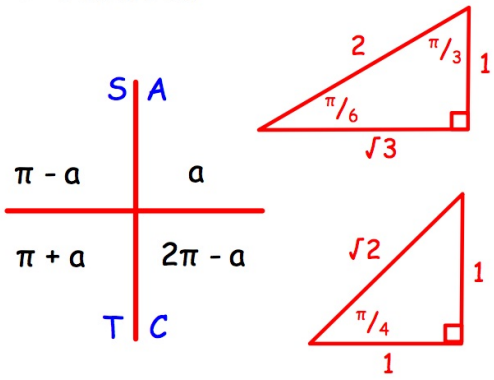
(6) $\tan {}^{5\pi}/_{6} = -\tan {}^{\pi}/_{6} = -{}^{1}/_{\sqrt{3}}$

(7) $\sin {}^{11\pi}/_{6} = -\sin {}^{\pi}/_{6} = -{}^{1}/_{2}$

(8) $\tan {}^{4\pi}/_{3} = +\tan {}^{\pi}/_{3} = +\sqrt{3}$

(9) $\cos {}^{2\pi}/_{3} = -\cos {}^{\pi}/_{3} = -{}^{1}/_{2}$

(10) $\sin {}^{3\pi}/_{4} = +\sin {}^{\pi}/_{4} = +{}^{1}/_{\sqrt{2}}$



(11) $\cos {}^{4\pi}/_{3} = -\cos {}^{\pi}/_{3} = -{}^{1}/_{2}$

(12) $\sin {}^{7\pi}/_{6} = -\sin {}^{\pi}/_{6} = -{}^{1}/_{2}$

(13) $\tan {}^{2\pi}/_{3} = -\tan {}^{\pi}/_{3} = -\sqrt{3}$

(14) $\cos {}^{5\pi}/_{3} = +\cos {}^{\pi}/_{3} = +{}^{1}/_{2}$

(15) $\sin {}^{7\pi}/_{4} = -\sin {}^{\pi}/_{4} = -{}^{1}/_{\sqrt{2}}$

(16) $\sin {}^{4\pi}/_{3} = -\sin {}^{\pi}/_{3} = -{}^{\sqrt{3}}/_{2}$

(17) $\cos {}^{11\pi}/_{6} = +\cos {}^{\pi}/_{6} = +{}^{\sqrt{3}}/_{2}$

(18) $\tan {}^{7\pi}/_{4} = -\tan {}^{\pi}/_{4} = -1$

(19) $\cos {}^{3\pi}/_{4} = -\cos {}^{\pi}/_{4} = -{}^{1}/_{\sqrt{2}}$

(20) $\sin {}^{5\pi}/_{3} = -\sin {}^{\pi}/_{3} = -{}^{\sqrt{3}}/_{2}$

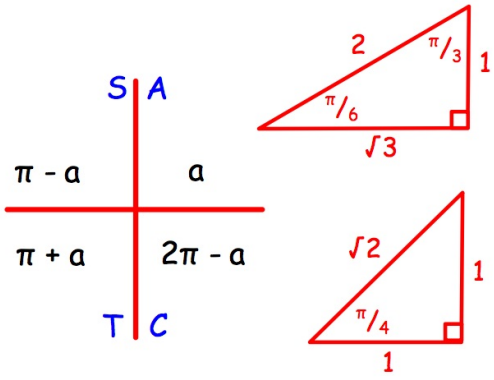
(21) $\tan {}^{7\pi}/_{6} = +\tan {}^{\pi}/_{6} = +{}^{1}/_{\sqrt{3}}$

(22) $\sin {}^{5\pi}/_{6} = +\sin {}^{\pi}/_{6} = +{}^{1}/_{2}$

(23) $\tan {}^{5\pi}/_{3} = -\tan {}^{\pi}/_{3} = -\sqrt{3}$

(24) $\cos {}^{5\pi}/_{6} = -\cos {}^{\pi}/_{6} = -{}^{\sqrt{3}}/_{2}$

(25) $\tan {}^{5\pi}/_{4} = +\tan {}^{\pi}/_{4} = +1$



(26) $\cos {}^{5\pi}/_{4} = -\cos {}^{\pi}/_{4} = -{}^{1}/_{\sqrt{2}}$

(27) $\tan {}^{11\pi}/_{6} = -\tan {}^{\pi}/_{6} = -{}^{1}/_{\sqrt{3}}$