(99) $2\cos\frac{1}{2}A = +\sqrt{(1+\sin A)} - \sqrt{(1-\sin A)}$.

(102) $x = \frac{2}{5}r\pi \pm \frac{2}{15}\pi \pm \frac{1}{10}\pi$, $y = \frac{2}{5}r\pi \pm \frac{1}{5}\pi \pm \frac{1}{15}\pi$.

(104) $x = \frac{1}{2}$. (105) 11·7157 miles. (107) $n\pi + \frac{1}{3}\pi$; or, $n\pi + \frac{1}{4}\pi$.

(110) 25·7834 yds. (115) 1·219714 miles and 1 mile.

(116) $\sin = \frac{63}{65}$, $\cos = -\frac{16}{65}$, $\tan = -\frac{63}{16}$.

(127) $4\theta \pm \theta = 2n\pi \pm \frac{3}{4}\pi$; or, $\frac{1}{2}(2n+1)\pi$.

(134) $5 + \frac{1}{2}\log 2 + \frac{1}{2}L\sec A = 1 - \log 2 + \frac{3}{5}L\cos B + \frac{1}{5}L\operatorname{cosec}$.

(139) $m\pi$; or, $n\theta = r\pi + (-1)^r(\frac{1}{2}\pi - \theta)$.

(144) $\log 5 = 2a - c$, $\log 7 = c - a$, $\log 13 = b - 4a + 2c$.

(145) In $\frac{1}{4}(2\sqrt{2} \pm 1)$ hours. (151) 60^0, 45^0, 135^0, 120^0.

(156) 1. (157) 30^0 and 40^0.

(161) $\theta = n\pi$ or $2\theta = n\pi + \frac{1}{4}\pi$. (164) $\cos\theta = \frac{1}{4}(1 \pm \sqrt{5})$.

(168) $\sin 2\theta = 0$ or $\cos 2\theta = \frac{1}{3}$ or $-\frac{1}{2}$. (178) θ.

(182) $\dfrac{600}{13^2\sqrt{26}}$ and $\dfrac{5}{12}$. (191) $m^2 + p^2 = n^2 + q^2$.

(192) $$-4\cos\frac{B+C-A}{2}\cos\frac{C+A-B}{2}\cos\frac{A+B-C}{2}\cos\frac{A+B+C}{2}.$$

(196) $\frac{1}{4}\pi - \theta = n\pi + (-1)^n(\frac{1}{4}\pi - \alpha)$.

(198) $$-4\cos\frac{90^0 - B - C + A}{2}\cos\frac{90^0 - C - A + B}{2}$$
$$\cos\frac{90^0 - A - B + C}{2}\sin\frac{A+B+C-90^0}{2}.$$

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(10) $-(x+y+z)(y+z-x)(z+x-y)(x+y-z)$.

(11) (i) $\frac{1}{15}\{6n\pi - 2\pi + (-1)^n\pi\}$. (ii) $\dfrac{4r\pi + \pi}{2(m \pm n)}$.

(iii) $x = \dfrac{\alpha - \beta}{2} + \cot^{-1}\left\{\tan\dfrac{\alpha+\beta}{2}\cdot\dfrac{m\sin\beta + n\sin\alpha}{n\sin\alpha - m\sin\beta}\right\}$.

(iv) $\dfrac{2r\pi + \pi}{2(m+n)}$. (v) $\sin 2\theta(3\cos 2\theta - 1)(2\cos 2\theta + 1) = 0$.

(vi) $\sin 4\theta . \cos\dfrac{5\theta}{2} . \sin\dfrac{3\theta}{2} = 0$. (vii) $\sin 8\theta . \sin 4\theta = 0$.

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