**3.** $\sin\alpha = \frac{7}{25}$ $\qquad 90 < \alpha < 180$

$\sin^2\alpha + \cos^2\alpha = 1$ $\qquad$ נשתמש בזהות $\qquad\qquad$ $\cos\alpha < 0$ כיון

$\cos\alpha = -\sqrt{1-\sin^2\alpha} = -\sqrt{1-\frac{49}{625}} = -\frac{24}{25}$

**9.** $\sin\alpha = \sin(\alpha+32)$

$180 - \alpha = \alpha + 32$ $\qquad\qquad$ $\sin\alpha = \sin(180-\alpha)$ $\qquad$ נשתמש בזהות

$2\alpha = 148$

$\alpha = 74$

**13.** $3\sin^2\alpha + \cos^2\alpha = 2\frac{1}{2}$

$2\sin^2\alpha + \sin^2\alpha + \cos^2\alpha = 2\frac{1}{2}$

$2\sin^2\alpha + 1 = 2\frac{1}{2}$ $\quad / -1$

$2\sin^2\alpha = 1\frac{1}{2}$ $\quad / : 2$

$\sin^2\alpha = 3/4$

$\sin\alpha = \sqrt{3}/4$

$\alpha = 120$ $\quad$ או $\quad \alpha = 60$

**17.** $\cos\alpha = -\frac{5}{13}$ $\qquad\qquad 90 < \alpha < 180$

$\qquad\qquad\qquad\qquad\qquad\qquad$ כיון $\sin\alpha > 0$ נשתמש בזהות

$\sin^2\alpha + \cos^2\alpha = 1$

$\sin^2\alpha + \left(-\frac{5}{13}\right)^2 = 1$

$\sin^2\alpha = 1 - \frac{25}{169} = \frac{144}{169}$ $\qquad \sin\alpha = \frac{12}{13}$

$\tan\alpha = \frac{\sin\alpha}{\cos\alpha} = \frac{\frac{12}{13}}{\frac{-5}{13}} = \frac{-12}{5} = -2.4$

**26.** $\tan\alpha = \frac{1}{2}$ $\longrightarrow$ $\frac{\sin\alpha}{\cos\alpha} = \frac{1}{2}$ $\longrightarrow$ $2\sin\alpha = \cos\alpha$

$\frac{\sin\alpha + 2\cos\alpha}{\cos\alpha + 3\sin\alpha} = \frac{\sin\alpha + 2\cdot 2\sin\alpha}{2\sin\alpha + 3\sin\alpha} = \frac{5\sin\alpha}{5\sin\alpha} = 1$

**41.** $\cot\alpha(\tan\alpha + \tan^3\alpha) = \frac{1}{\cos^2\alpha}$

$\cot\alpha\cdot\tan\alpha + \cot\alpha\cdot\tan^3\alpha = "$ $\qquad\qquad$ $\tan\alpha\cot\alpha = 1$ נשתמש בזהות

$1 + \tan^2\alpha = \frac{1}{\cos^2\alpha}$ $\qquad\qquad\qquad$ $1 + \tan^2\alpha = \frac{1}{\cos^2\alpha}$ נשתמש בזהות

**59.** $\frac{1+\tan^2\alpha}{1-\cos^2\alpha} \cdot \frac{1-\sin^2\alpha}{1+\cot^2\alpha} = 1$ $\qquad\qquad$ $1+\tan^2\alpha = \frac{1}{\cos^2\alpha}$ , $1-\sin^2\alpha = \cos^2\alpha$ נשתמש בזהויות

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ $1+\cot^2\alpha = \frac{1}{\sin^2\alpha}$ ; $1-\cos^2\alpha = \sin^2\alpha$

$\frac{\frac{1}{\cos^2\alpha}}{\sin^2\alpha} \cdot \frac{\cos^2\alpha}{\frac{1}{\sin^2\alpha}} = 1$