Find all solutions in the interval $[0,2\pi)$ **without** using a calculator.

10. $2\sin^2 x - \sin x - 3 = 0$

$u = \sin x$

$2u^2 - u - 3 = 0$

$(2u - 3)(u + 1) = 0$

$u = \frac{3}{2}$ $\quad u = -1$

$\sin x = \frac{3}{2}$ $\quad \sin x = -1$

$x = \frac{3\pi}{2}$

11. $\cos^2 x = 1 - \sin x$

$(1 - \sin^2 x) + \sin x - 1 = 0$

$-\sin^2 x + \sin x = 0$

$-\sin x(\sin x - 1) = 0$

$-\sin x = 0$ $\quad \sin x = 1$

$x = 0, \frac{\pi}{2}, \pi$

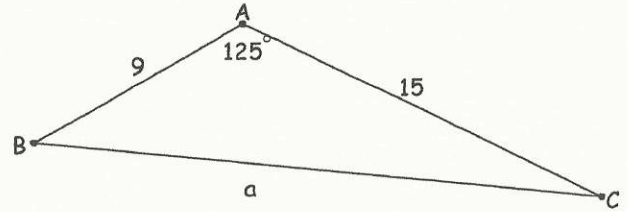
12. $4\cos^2 x - 3 = 0$

$\cos^2 x = \frac{3}{4}$

$\cos x = \pm\frac{\sqrt{3}}{2}$

$x = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$

13. Solve the triangle.



$a^2 = 9^2 + 15^2 - 2(9)(15)\cos 125^\circ$

$a = 21.4678$

$\frac{\sin B}{15} = \frac{\sin 125}{21.4678}$

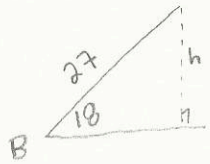
$B = 34.9149^\circ$

$\angle C = 180 - 125 - 34.9149$

$\angle C = 20.0851^\circ$

14. State whether the given measurements would determine zero, one, or two triangles.

$m\angle B = 18^\circ,\ a = 27\text{yd},\ b = 23\text{yd}$



$\sin 18^\circ = \frac{h}{27}$

$h = 8.3435$

$b \quad h$

$23 > 8.3435$

TWO TRIANGLES