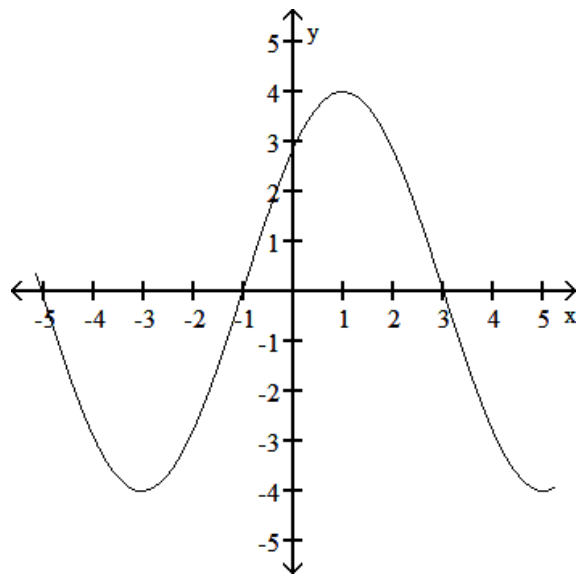
1) (no calculator part) Given that $y = 4\sin\left(\frac{\pi}{4}x + \phi\right)$ has the shown waveform, find ϕ in radians:



A) $-\frac{\pi}{8}$ B) $\frac{\pi}{4}$ C) $\frac{\pi}{8}$ D) $-\frac{\pi}{4}$

2) (no calculator part) Find the exact value of: $\cos(2\theta)$ given that $\sin\theta = \frac{4}{5}$

A) $\frac{9}{25}$

B) $-\frac{7}{25}$

C) $-\frac{9}{25}$

D) $\frac{7}{25}$

3) (no calculator part) Solve the equation. $\cos(2\theta) = \frac{\sqrt{2}}{2}$ and give a general formula for all the solutions, letting "k" represent any integer:

A) $\left\{\theta \middle| \theta = \frac{\pi}{8} + 2k\pi, \theta = \frac{7\pi}{8} + 2k\pi\right\}$

B) $\left\{\theta \middle| \theta = \frac{\pi}{8} + k\pi, \theta = \frac{7\pi}{8} + k\pi\right\}$

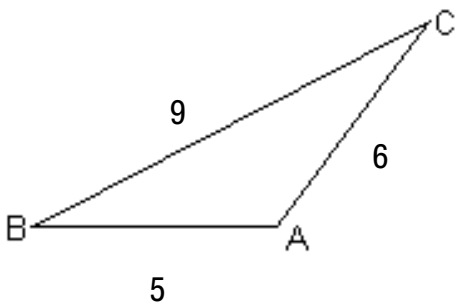
C) $\left\{\theta \middle| \theta = \frac{\pi}{4} + k\pi, \theta = \frac{3\pi}{4} + k\pi\right\}$

D) $\left\{\theta \middle| \theta = \frac{2\pi}{3} + k\pi, \theta = \frac{4\pi}{3} + k\pi\right\}$

4) (use calculator) A ship sailing parallel to shore sights a lighthouse at an angle of 14° from its direction of travel. After traveling 4 miles farther, the angle is 25°. At that time, how far is the ship from the lighthouse?

A) 5.07 mi
B) 2.29 mi
C) 4 mi
D) 8.86 mi

5) (use calculator) A triangle has sides a = 9, b = 6, and c = 5. Find the angle "A" opposite side "a":



A) A = 110.5°
B) A = 109.5°
C) A = 115.5°
D) A = 118.5°

6) (a calculator) A wagon is pulled horizontally by exerting a force of 60 pounds on the handle at an angle of 25° to the horizontal. How much work is done in moving the wagon 50 feet in a horizontal direction?

A) 1268 ft-lb
B) 2719 ft-lb
C) 2111 ft-lb
D) 1617 ft-lb