7. Write an equation of the graph y = 2 sin x translated up 3 units and right ¶ units.

① $\pi = \frac{c}{b} \rightarrow \pi = \frac{c}{1}$

$c = \pi$

② $y = a\sin(bx - c) + d$

$y = 2\sin(x - \pi) + 3$

8. Given $\sin\theta = \frac{4}{5}$ *and* $\frac{\pi}{2} < \theta < \pi$, find the values of the other five trigonometric functions of θ

① find $\cos\theta$ for adj. (-x)

opp: 4

hyp: 5

adj: 3

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

$(\frac{4}{5})^2 + \cos^2\theta = 1$

$\cos^2\theta = 1 - \frac{16}{25}$

$\cos^2\theta = \frac{9}{25}$ $\cos\theta = \frac{3}{5}$

$\sin\theta = \frac{4}{5}$ $\csc\theta = \frac{5}{4}$

$\cos\theta = -\frac{3}{5}$ $\sec\theta = -\frac{5}{3}$

$\tan\theta = -\frac{4}{3}$ $\cot\theta = -\frac{3}{4}$

Simplify each expression.

8. $\tan(\frac{\pi}{2} - \theta)\sin\theta$

$\cot\theta \sin\theta$

$(\frac{\cos\theta}{\sin\theta})(\sin\theta)$

$= \cos\theta$

9. $\csc\theta \cot^2\theta + \frac{1}{\sin\theta}$

$\csc\theta\cot^2\theta + \csc\theta$

$\csc\theta(\csc^2\theta - 1) + \csc\theta$

$\csc^3\theta - \csc\theta + \csc\theta$

$\csc^3\theta$

OR $\frac{1}{\sin\theta} \cdot \frac{\cos^2\theta}{\sin^2\theta} + \frac{1}{\sin\theta}$

$\frac{\cos^2\theta}{\sin^3\theta} + \frac{1}{\sin\theta}(\frac{\sin^2\theta}{\sin^2\theta})$

$\frac{\cos^2\theta + \sin^2\theta}{\sin^3\theta} = \frac{1}{\sin^3\theta} = \csc^3\theta$

10. $\frac{\tan x \csc x}{\sec x}$

$\frac{\frac{\sin x}{\cos x} \cdot \frac{1}{\sin x}}{\frac{1}{\cos x}}$

$\frac{\frac{1}{\cos x}}{\frac{1}{\cos x}} = 1$

Verify the trigonometric identity

11. $\frac{\sin^2(-x)}{\tan^2} = \cos^2 x$

① $\frac{(-\sin x)^2}{\tan^2 x} = \frac{\sin^2 x}{\tan^2 x} = \frac{\sin^2 x}{(\frac{\sin^2 x}{\cos^2 x})} = \sin^2 x \cdot \frac{\cos^2 x}{\sin^2 x} = \cos^2 x$ ☺