(e) $12\cos^2 x - 12 = 0$ $[-90°, 90°]$

$\frac{12\cos^2 x}{12} = \frac{12}{12}$

$\sqrt{\cos^2 x} = \pm\sqrt{1}$

$\cos x = \pm 1$

$\cos x = 1$

$\boxed{x = 0°}$

only answer

$\cos x = -1$

$x = 180°$

Don't include not in interval

(f) $12\cos^2 x - 12 = 0$ $(-360°, 360°]$

$12(\cos^2 x - 1) = 0$

diff of squares

$12(\cos x + 1)(\cos x - 1) = 0$

$\cos x + 1 = 0$ $\quad$ $\cos x - 1 = 0$

$\cos x = -1$ $\quad$ $\cos x = 1$

$x = \cos^{-1}(-1)$ $\quad$ $x = \cos^{-1}(1)$

$x = 180°$ $\quad$ $x = 0°$

$x = -180°$ $\quad$ $x = 360°$

$x = \{-180°, 0°, 180°, 360°\}$

Solve the following trigonometric equations:

(a) $2\csc^2\theta - 8 = 0$ for all θ in radians

$$\frac{2\csc^2\theta}{2} = \frac{8}{2}$$

$$\sqrt{\csc^2\theta} = \sqrt{4}$$

$$\csc\theta = \pm 2$$

$$\theta = \left\{ \begin{matrix} \pi/6 \\ 5\pi/6 \\ 7\pi/6 \\ 11\pi/6 \end{matrix} \pm 2\pi K,\ K \in I \right\}$$

$\csc\theta = 2$

$$\frac{1}{\sin\theta} = 2$$

$$\sin\theta = \frac{1}{2}$$

$$\theta = \frac{\pi}{6}, \frac{5\pi}{6}$$

$\csc\theta = -2$

$$\frac{1}{\sin\theta} = -2$$

$$\sin\theta = -\frac{1}{2}$$

$$\theta = \frac{7\pi}{6}, \frac{11\pi}{6}$$

Quadratic in Disguise, $0° \le \theta \le 360°$.

(c) $\sin^2 x - 3\sin x - 4 = 0$

let $m = \sin x$

$m^2 - 3m - 4 = 0$

$(m-4)(m+1) = 0$

$m - 4 = 0$ $\quad$ $m + 1 = 0$

$m = 4$ $\quad$ $m = -1$

$\sin x = 4$ $\quad$ $\sin x = -1$

$x = \sin^{-1}(4)$ $\quad$ $x = 270°$

$x =$ error

no solution

(d) $\sqrt{\tan^2 \theta} = \sqrt{3}$

$\tan\theta = \pm\sqrt{3}$

$\tan\theta = \sqrt{3}$ $\quad$ $\tan\theta = -\sqrt{3}$

$\theta = 60°$ $\quad$ $\theta = 120°$

$240°$ $\quad$ $= 300°$

$\theta = \{60°, 120°, 240°, 300°\}$

Pg 211

6. Copy and complete the table to express each domain or interval using the other notation.

	Domain	Interval Notation
a)	$-2\pi \le \theta \le 2\pi$	$\theta \in [-2\pi, 2\pi]$
b)	$-\frac{\pi}{3} \le \theta \le \frac{7\pi}{3}$	
c)	$0° \le \theta \le 270°$	
d)	$0 \le \theta < \pi$	$\theta \in [0, \pi)$
e)		$\theta \in (0°, 450°)$
f)		$\theta \in (-2\pi, 4\pi]$

set notation:

$\{x \mid 3 \le x \le 7, x \in R\}$

interval notation

$x \in [3, 7]$

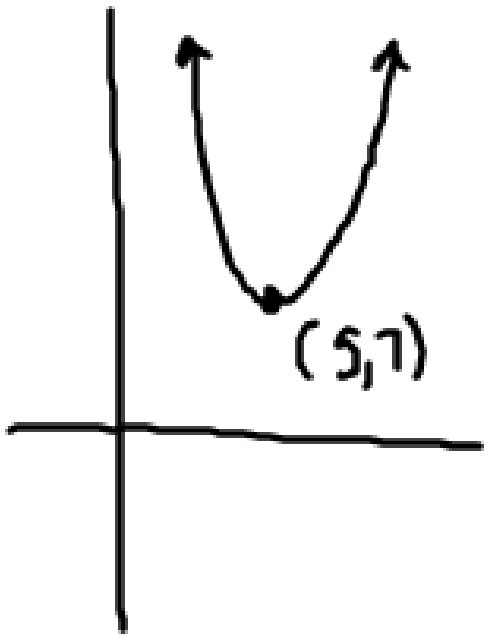
(_,_) pt not included

[_,_] pt IS included

the eht

2π 7, 0 7, -2π

backwards is not okay



$R: \{y \mid y \geq 7, y \in \mathbb{R}\}$

~~$7 \leq y$~~

$y \geq$

$y \leq$

small $< y <$ big

15. The average number of air conditioners sold in western Canada varies seasonally and depends on the month of the year. The formula $y = 5.9 + 2.4 \sin\left(\frac{\pi}{6}(t-3)\right)$ gives the expected sales, y, in thousands, according to the month, t, where $t = 1$ represents January, $t = 2$ is February, and so on.

a) In what month are sales of 8300 air conditioners expected?

needs to be 8.3 ← y value.

$$8.3 = 5.9 + 2.4 \sin\left[\frac{\pi}{6}(t-3)\right]$$

call X

$$8.3 = 5.9 + 2.4 \sin x$$

$$2.4 = 2.4 \sin x$$

$$1 = \sin x \longrightarrow$$

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

$$\frac{\pi}{6}(t-3) = \frac{\pi}{2}$$

$$t-3 = \frac{\pi}{2} \div \frac{\pi}{6}$$

$$t-3 = \frac{\pi}{2} \cdot \frac{6}{\pi}$$

$$t-3 = 3 \longrightarrow t = 6$$

June

HW: pg 212
6,7,9-11,13,21
and Pg 217 #20, 23