Verify

5) $\frac{\cos x - \cos y}{\sin x + \sin y} + \frac{\sin x - \sin y}{\cos x + \cos y} = 0$

$a^2 - b^2$
$= (a+b)(a-b)$

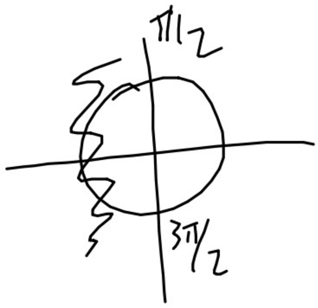
LHS

$\Rightarrow \frac{\cos^2 x - \cos^2 y + \sin^2 x - \sin^2 y}{(\sin x + \sin y)(\cos x + \cos y)} = \frac{1 - \cos^2 y - \sin^2 y}{\quad} = \frac{1 - 1(\cos^2 y + \sin}{\quad}$

$= \frac{1-1}{\sim} = 0$ ✓

7) Solve for x on $[0, 2\pi)$: $\frac{x-\pi}{\cos^2 x} < 0$

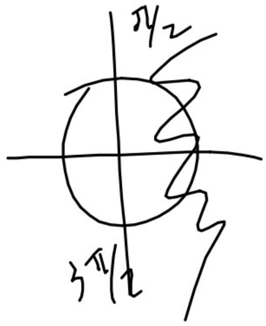
$x \neq \frac{\pi}{2}, \frac{3\pi}{2}$



① $x - \pi > 0$ and $\cos^2 x < 0$

$x > \pi$ and $\cos x < 0$

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



② $x - \pi < 0$ and $\cos^2 x > 0$

$\cos x > 0$

$x < \pi$ and $-\frac{\pi}{2} < x < \frac{\pi}{2}$

4) $\cot(-30°) + \tan(600°) - \csc(-450°)$

$$= \frac{\cos(-30°)}{\sin(-30°)} + \frac{\sin(240°)}{\cos(240°)} - \frac{1}{\sin(-90°)} \rightarrow -\sin(90°)$$

$$= \frac{\cos(30°)}{-\sin(30°)} + \cdot \; - - \; - \; - \cdot$$

$$= -\frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} + \frac{+\frac{\sqrt{3}}{2}}{+\frac{1}{2}} + 1$$

$$0 + 1 = \boxed{1}$$

$7+7+7$

112×364

Pg 18

$a^3+b^3=(a+b)(a^2-2ab+b^2)$

18) $x^6+1 = (x^2)^3+1^3$

$= (x^2+1)\boxed{(x^4-2x^2+1)}$

$= (x^2+1)(x^2-1)(x^2-1)$

$(x^2+1)(x+1)(x-1)(x+1)(x-1)$

$(x^2+1)(x+1)^2(x-1)^2$

124

2 62

2 31

$=2^2(31)$

5) $16x^4 - 24x^2y + 9y^2$

$\boxed{(4x^2 - 3y)(4x^2 - 3y)}$

144

$-12 \quad -12$

$-3 \quad -3$

-24

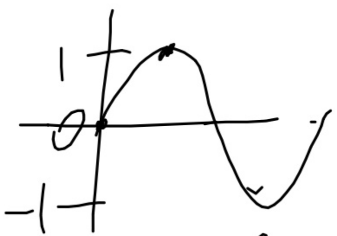
$-\frac{12}{4} \quad -3$

pg. 40

6a) $\frac{\cancel{5}\sin\theta}{\cancel{5}} = \frac{-2}{5}$

$\sin\theta = \frac{-2}{5}$

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



$-1 \le \frac{-2}{5} \le 1$

b) $3\sin\alpha + 4\cos\beta = 8$

For sin, cos.

$-1 \le \sin\alpha \le 1$, $-1 \le \cos\beta \le 1$

@ $\sin\alpha = 1 = \cos\beta$

$3(1) + 4(1) = 7 \neq 8$

$7 < 8$

No!

pg. 48

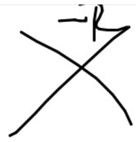
b) $2\cos^2 x + \sin x - 1 = 0$

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

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

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

-1 $\quad -1$



ex $x^2 + x + 3$

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

$\cos^2 = 1 - \sin^2$

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

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

$x = \frac{7\pi}{6}, \frac{11\pi}{6}, \frac{\pi}{2}$