Tutorial 2 (Part 1) Answers

Question 1:

a) $\csc u$ b) 1

c) $\cos y$ d) $2\sec u$

Question 3:

a) $\frac{1}{2\sqrt{2}}\left(\sqrt{3}+1\right)$ b) $\frac{1}{2\sqrt{2}}\left(\sqrt{3}-1\right)$ c) $\frac{1}{2\sqrt{2}}\left(1-\sqrt{3}\right)$

d) $\frac{1-\sqrt{3}}{1+\sqrt{3}}$ e) $-\frac{1}{2\sqrt{2}}\left(\sqrt{3}+1\right)$ f) $\frac{1}{2\sqrt{2}}\left(-\sqrt{3}+1\right)$

g) $-\frac{1}{2\sqrt{2}}\left(\sqrt{3}+1\right)$ h) $\frac{1-\sqrt{3}}{1+\sqrt{3}}$ i) $-\frac{1}{2\sqrt{2}}\left(\sqrt{3}+1\right)$

Question 5:

a) $-\frac{3}{5}$ b) $\frac{-3-4\sqrt{3}}{10}$ c) $\frac{2\sqrt{5}}{65}$

Question 6:

	$\sin 2x$	$\cos 2x$	$\tan 2x$
a)	$\frac{120}{169}$	$\frac{119}{169}$	$\frac{120}{169}$
b)	$-\frac{24}{25}$	$-\frac{7}{24}$	$\frac{24}{7}$
c)	$-\frac{\sqrt{15}}{8}$	$\frac{7}{8}$	$-\frac{\sqrt{15}}{7}$
d)	$-\frac{24}{25}$	$\frac{7}{25}$	$-\frac{24}{7}$

Question 7:

a) $\frac{\sqrt{2-\sqrt{3}}}{2}$ b) $2-\sqrt{3}$ c) $-\frac{\sqrt{2+\sqrt{3}}}{2}$

d) $\sqrt{\frac{\sqrt{2}-1}{2\sqrt{2}}}$ e) $\sqrt{2}-1$ f) $-\sqrt{\frac{\sqrt{2}-1}{2\sqrt{2}}}$

Question 8:

	$\sin\frac{x}{2}$	$\cos\frac{x}{2}$	$\tan\frac{x}{2}$
a)	$\frac{1}{\sqrt{10}}$	$\frac{3}{\sqrt{10}}$	$\frac{1}{3}$
b)	$\frac{3}{\sqrt{10}}$	$-\frac{1}{\sqrt{10}}$	-3
c)	$\sqrt{\frac{\sqrt{2}-1}{2\sqrt{2}}}$	$\sqrt{\frac{\sqrt{2}+1}{2\sqrt{2}}}$	$\sqrt{\frac{\sqrt{2}-1}{\sqrt{2}+1}}$
d)	$\sqrt{\frac{\sqrt{26}+5}{2\sqrt{26}}}$	$-\sqrt{\frac{\sqrt{26}-5}{2\sqrt{26}}}$	$-\sqrt{\frac{\sqrt{26}+5}{\sqrt{26}-5}}$

Question 9:

a) $\frac{336}{625}$ b) $-\frac{119}{169}$ c) $\frac{1}{\sqrt{5}}$

Question 10:

a) $\frac{3}{4\sqrt{2}}(2+\sqrt{6})$ b) $\frac{1}{2\sqrt{2}}(2+\sqrt{6})$ c) $\frac{1}{4\sqrt{2}}(2-\sqrt{2})$

d) $\sqrt{2+\sqrt{3}}$ e) $\sqrt{\frac{3}{2}}$ f) $\frac{\sqrt{2-\sqrt{3}}}{2}$

Question 13:

a) $\theta = 90° + 360°n$
$\theta = 210° + 360°n$
$\theta = 330° + 360°n$

b) $\theta = 0° + 360°n$
$\theta = 41.4° + 360°n$
$\theta = 180° + 360°n$
$\theta = 318.6° + 360°n$

c) $\theta = 60° + 360°n$
$\theta = 180° + 360°n$
$\theta = 300° + 360°n$

d) $\theta = 75.2° + 360°n$
$\theta = 141.6° + 360°n$
$\theta = 255.2° + 360°n$
$\theta = 321.6° + 360°n$

*n are any integers from $\ldots, -2, -1, 0, 1, 2, \ldots$

Question 14:

a) $\theta = 20°, 100°, 140°, 220°, 260°, 340°$

b) $\theta = 60°, 120°, 240°, 300°$

c) $\theta = 50°, 110°, 170°, 230°, 290°, 350°$

d) $\theta = 0°$

e) No solution.

f) $\theta = 0°, 180°$

g) $\theta = 60°, 300°$

h) $\theta = 0°, 90°, 180°, 270°$

Question 15:

a) $\theta = 90°, 210°, 270°, 330°$

b) $\theta = 0°, 180°$

c) $\theta = 0°, 90°, 270°$

d) $\theta = 65.7°, 204.3°$

Question 16:

a) $\theta = 0°, 30°, 60°, 90°, 120°, 150°, 180°, 210°, 240°, 270°, 300°, 330°$

b) $\theta = 22.5°, 30°, 67.5°, 112.5°, 150°, 157.5°, 202.5°, 247.5°, 292.5°, 337.5°$