NAME: AFOLABI HABIB
DEPT: PETROLEUM ENGINEERING
18/ENG07/002

a) $\lim_{x \to 0} \frac{\sin ax}{bx}$

Direct substitution

$\frac{\sin a(0)}{b(0)} = \frac{\sin 0}{0} = \frac{0}{0}$

Applying L'hospitals rule

$\lim_{x \to 0} \frac{a\cos ax}{b}$

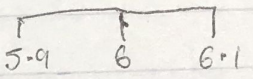
At $x = 0$

$\frac{a \times \cos a(0)}{b} = \frac{a}{b}$

b $F(x) = 5x - 21$

$\delta = 0.1 \quad \Delta\delta = 0.01$

at $x \to 6$ $F(x)$ is a



$a - \delta$	$L - \varepsilon$	a	$L + \varepsilon$	$a + \delta$
8.50	5.90	6	6.1	9.50
8.55	5.91		6.09	9.45
8.60	5.92		6.08	9.40
8.65	5.93		6.07	9.35
8.70	5.94		6.06	9.30
8.75	5.95		6.05	9.25
8.80	5.96		6.04	9.20
8.85	5.97		6.03	9.15
8.90	5.98		6.02	9.10
8.95	5.99		6.01	9.05
9.00	6.00		6.00	9.00

Since the left hand limit and right hand limit lead to one the

$\lim_{x \to 6} 5x - 2 = 9$

c $f(x) = (25 - x^2)^{1/2}$

mathematically

$f(-5) = (25 - (-5)^2)^{1/2}$

$= (25 - 25)^{1/2}$

$0^{1/2} = 0$

$f(5) = (25 - (5)^2)^{1/2}$

$(25 - 25)^{1/2}$

$0^{1/2} = 0$

$f(5) = f(-5)$

∴ the function is continuous at $(5, -5)$