

Assignment #1  
SOLUTIONS  
CALCULUS I - ELECTROTECH

From 9th Edition TEXTBOOK (SECTION 23)  
P. 656

# 18 (a)  $f(2) \Rightarrow DNE$   
(b)  $\lim_{x \rightarrow 2} f(x) = 1$

# 19 (a)  $f(2) = 0$  (6 MARKS)  
(b)  $\lim_{x \rightarrow 2} f(x) = -1$

# 20 (a)  $f(2) DNE$   
(b)  $\lim_{x \rightarrow 2} f(x) = 0$

(FROM 9th Ed. # 26, 28, 34, 36) (FROM 8th # 22, 24, 30, 32)

(# 26, OR 22)

$$\lim_{x \rightarrow -3} \frac{x^3 + 2x^2 - 2x + 3}{x + 3}$$

$x$	-3.100	-3.01	-3.001	-2.999	-2.99	-2.9
$f(x)$	13.71	13.07	13.007	12.993	12.93	12.31

$\rightarrow \rightarrow \rightarrow \rightarrow \rightarrow 3 \leftarrow \leftarrow \leftarrow \leftarrow$

FROM THE VALUES IN THE TABLE WE CONCLUDE THAT

$$\lim_{x \rightarrow -3} \frac{x^3 + 2x^2 - 2x + 3}{x + 3} = \boxed{13} \quad (5 \text{ MARKS})$$

$$\#28 \text{ (OR 2)} \quad f(x) = \frac{e^x - 1}{x}$$

$x$	-0.1	-0.01	-0.001	0.001	0.01	0.1
$f(x)$	0.9516	0.995	0.999	1.0005	1.005	1.05

$\longrightarrow \longrightarrow \longrightarrow 0 \longleftarrow \longleftarrow \longleftarrow$

$$\lim_{x \rightarrow 0} \frac{e^x - 1}{x} = 1 \quad (5 \text{ MARKS})$$

$$\# 34 \text{ (OR 30)}$$

$$\lim_{V \rightarrow 2} \frac{4V^2 - 8V}{V - 2} = \lim_{V \rightarrow 2} \frac{4V(\cancel{V-2})}{(\cancel{V-2})} = \lim_{V \rightarrow 2} 4V = 4(2) = \boxed{8}$$

(3 MARKS)

$$\# 36 \text{ (OR 32)}$$

$$\begin{aligned} & \lim_{x \rightarrow 3} \frac{x^2 - 2x - 3}{3 - x} \\ &= \lim_{x \rightarrow 3} \frac{(x-3)(x+1)}{-(x-3)} \\ &= \lim_{x \rightarrow 3} \frac{x+1}{-1} \\ &= \frac{3+1}{-1} \\ &= \boxed{-4} \end{aligned}$$

(3 MARKS)