

# STATIONARY POINTS

① a)  $\frac{dy}{dx} = 6x^2 - 12x$   
 $x = -1 \rightarrow$  decreasing

b)  $\frac{dy}{dx} = 8x + 12$   
 $x = 2 \rightarrow$  increasing

c)  $\frac{dy}{dx} = -2x$   
 $x = 0 \rightarrow$  stationary

d)  $\frac{dy}{dx} = \frac{1}{x^2}$   
 $x = -3 \rightarrow$  increasing

② a)  $\frac{dy}{dx} = \frac{1}{x^2}$     b)  $\frac{dy}{dx} = 3(2x+1)^2$     c)  $\frac{dy}{dx} = -\frac{16}{x^2}$     d)  $\frac{dy}{dx} = -(3x^2+4)$

③ a) Min TP @ (5, -4)

b) Max TP @ (0, 2)  
 Min TP @ (6, -106)

c) Max @ (-2, 64)  
 Min @ (2, -64)

d) Max @ (-2, 22)  
 Min @ (1, -5)

e) FPOI @ (0, -1)  
 Min @ (3, -28)

f) Max @ (0, 5)  
 Min @ (6, 1733)  
 Min @ (-3, 32)

g) Max @ (-1, 2)  
 FPOI @ (0, 0)  
 Min @ (1, -2)

h) Min @ (-2, 0)  
 Max @ (0, 16)  
 Min @ (2, 0)

i) Max @ ( $\frac{4}{3}, \frac{4}{27}$ )  
 Min @ (2, 0)

j) Min @ (50, 7500)

k) Min @ (-80, -40)  
 Max @ (80, 40)

l) Max @ (5 $\sqrt{3}$ , 24 $\sqrt{4}$ )  
 Min @ (-5 $\sqrt{3}$ , -20 $\sqrt{4}$ )

