

## 14.7 Answers

① a)  $f(1,1) = f(-1,-1) = -1$  is a local min.

$(0,0,1)$  is a saddle point.

b)  $f(2,0) = e^4$  local max

c)  $f(0,0) = 0$  local min,  $f(0, -\frac{5}{3}) = \frac{125}{27}$  local max  
 $(\pm 2, -1, 3)$  saddle pts.

d) For every integer  $k$ ,  $(k\pi, 0, 0)$  is a saddle point,

e)  $f(1,1) = f(-1,-1) = 4$  local min

② a)  $f(0,2) = -9$  abs min

$f(3,0) = 10$  abs max

b)  $f(0,0) = 6$  abs min

$f(1,\pm 1) = 9$  abs max

c)  $f(1,1) = 1$  abs min

$f(3,0) = 84$  abs max

d)  $f(0,y) = f(x,0) = 0$  abs min where

$0 \leq x, y \leq 2.$

$f(\frac{\sqrt{8}}{\sqrt{3}}, \frac{2}{\sqrt{3}}) = \frac{16}{3\sqrt{3}}$  abs max

③  $(\frac{10}{3}, \frac{7}{3}, \frac{5}{3})$

⑤  $20\sqrt[3]{7} \times 20\sqrt[3]{7} \times 10\sqrt[3]{7}$  cm

④  $(0, \pm\sqrt{2}, 0)$