

PS 17 Selected Answers

① (a) maxima: $(\pm \sqrt{\frac{2}{3}}, \frac{1}{\sqrt{3}})$
max. value: $\frac{2}{(3\sqrt{3})}$

(b) minima: $(1, 1), (-1, -1)$
min. value: $\sqrt{2}$

(c) minima: $(-1, -1, 1), (-1, 1, -1), (1, -1, -1), (1, 1, 1)$
min. value: $\sqrt{3}$

(d) minimum: $(-\frac{68}{75}, -\frac{80}{75}, \frac{76}{75})$
min. value: $\frac{51808}{1875}$

④ (a) It's an ellipse

(b) When $\lambda = \frac{2}{3}$, $y = x$ and we get
the points $(1, 1)$ and $(-1, -1)$
closest

When $\lambda = 2$, $y = -x$ and we have
the points $(\sqrt{3}, -\sqrt{3})$ and $(-\sqrt{3}, \sqrt{3})$.
farthest.