Week 4 Homework MAT 2601 (Homework)

Question 1

Absolute maximum: $(x, y) = \left(-\frac{2}{3}, \frac{202}{27}\right)$

Absolute minimum: $(x, y) = (2, -2)$

Question 2.

$f'(x) = 3x^2 + 2x - 1$

Critical value:

$x = -\frac{2}{3}$.

Function at critical value: $(x, y) = \left(-\frac{2}{3}, \frac{202}{27}\right)$

Function of the endpoints of the given value:

$(x, y) = (3, -27)$ (smaller x-value)

$(x, y) = (0, 6)$: (larger x-value)

Absolute maximum : $\left(-\frac{2}{3}, \frac{202}{27}\right)$

~~Relat~~ Absolute minimum: $(-3, -27)$

Question 3.

$x = 14$ computers.

$R(x) = \$ 11172$.

Question 4

$x = 0$ units.

$\$ 90$.

Question 5

$x = \cancel{400}\ 50$

Maximum profit: $\$ 2200$.

Question 6

(a) Region 1: $\$ 322.500$ million.

Region 2: $\$ 140.769$ million.

(b) 463.269.

Question 7

40.

Question 8.

45

Question 9

Side to the parallel dividers: $\frac{13}{3}$

Side to the perpendicular to the dividers: 13

Question 10

29 plates.

Question 11

(a) Vertical asymptotes: $x = 4$

(b) 1

(c) 1

(d) Horizontal asymptotes: $y = 1$

Question 12

Horizontal asymptote: $y = 0$.

Vertical asymptote: $x = 3, -3$

Question 13

Horizontal asymptote: $y = x$.

Vertical asymptote: $x = 0$.

Graph: 2nd graph.

Question 14

horizontal asymptotes: $y=0$.

Vertical asymptotes: $x=0$.

Critical points:

- $(x, y) = (2, 0)$ - smaller x-value.

$(x, y) = (3, 2)$ - larger x-value.

Relative maximum: $(3, 2)$
Relative minimum: $(2, 0)$
DNE
sketch the graph: 4th graph.

Question is.

(a) 4th graph.

(b) vertical asymptotes: D.N.E
horizontal asymptote: $y=0$

Relative maximum: $\left(120, \frac{1}{240}\right)$

Relative minimum: $\left(-10, -\frac{1}{20}\right)$

(c) 2nd graph