Revision Exercise (Curve Sketching)

1.

a)

b)

c)

d)

2.

a)

b)

c)

d)

e)

f)

Errata in question: y-intercept should be at (0,4) instead of (0,8).

g)

h)

2
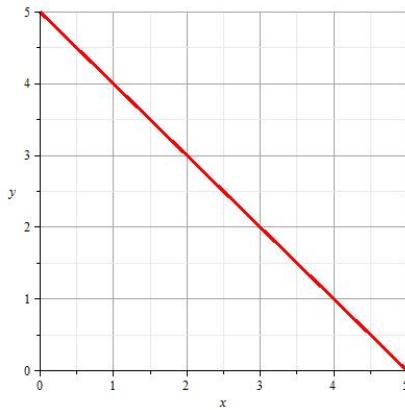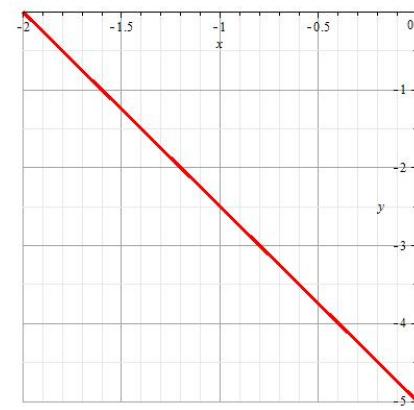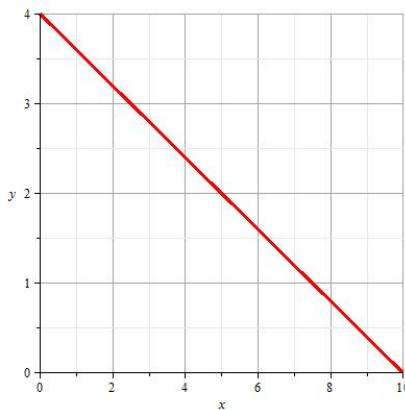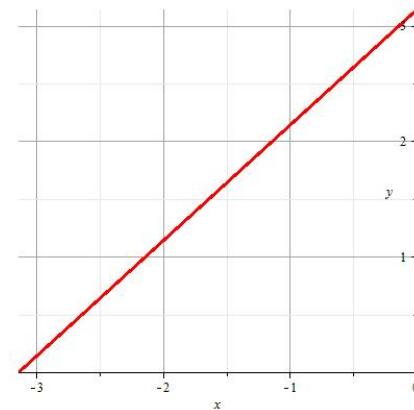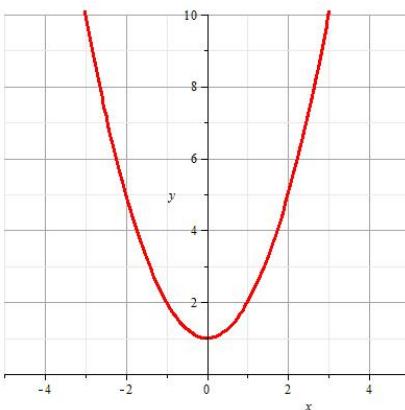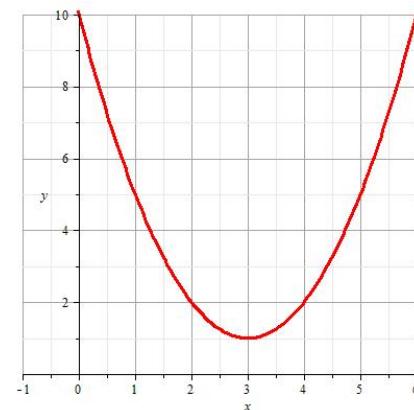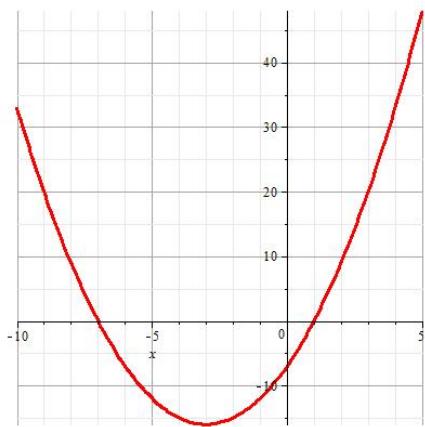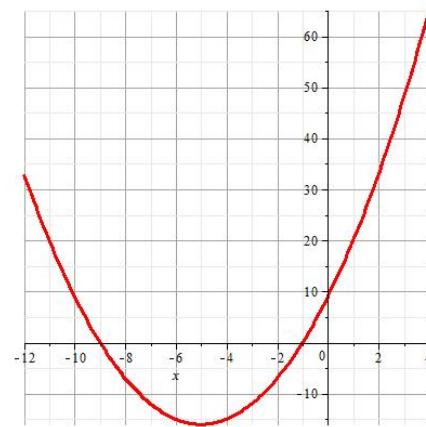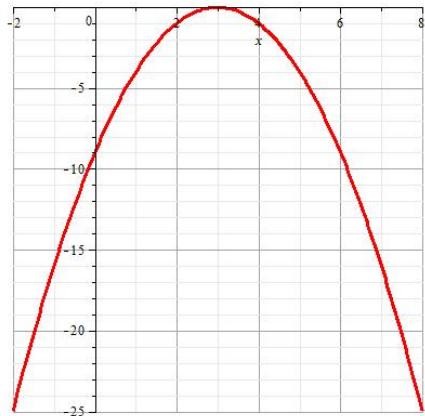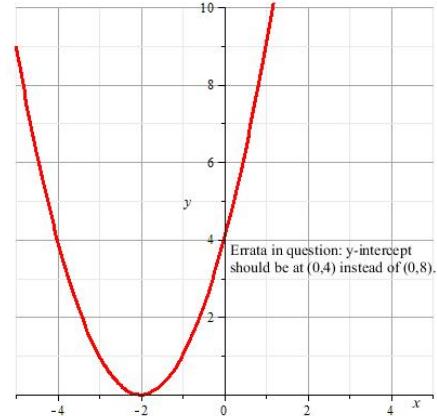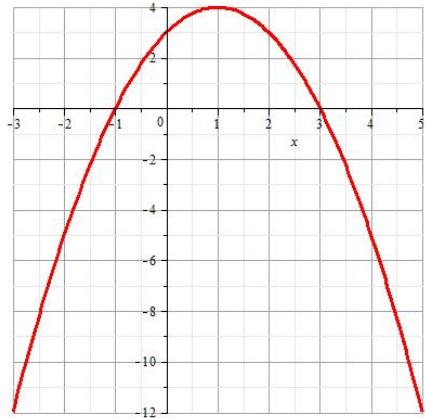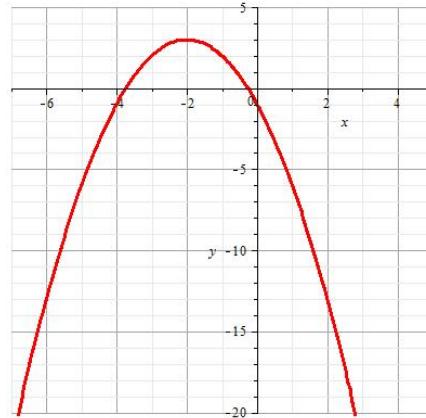
3.

a)
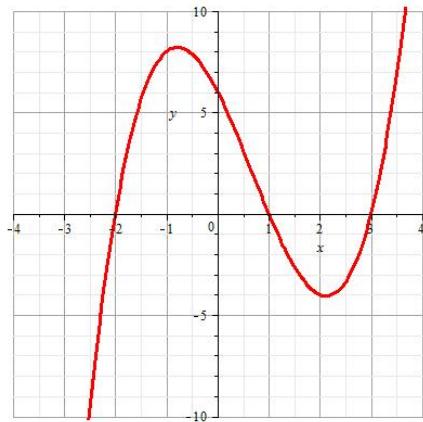
b)
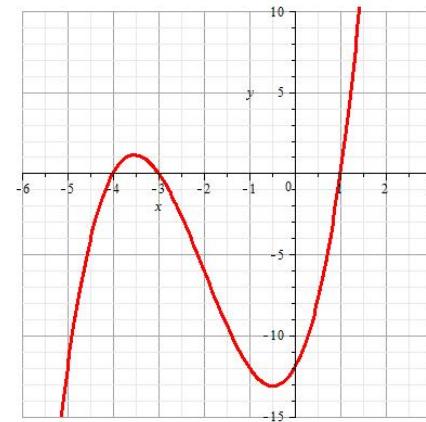
c)
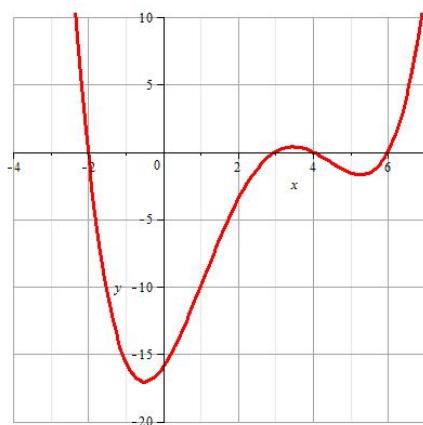
d)
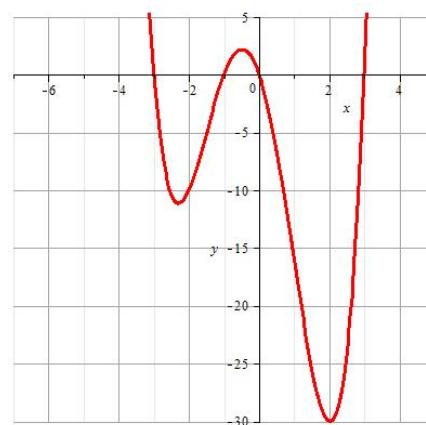
4.

a)
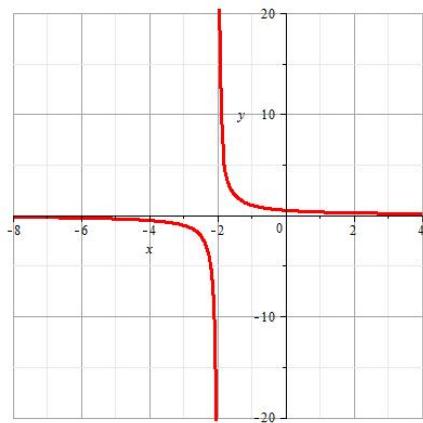
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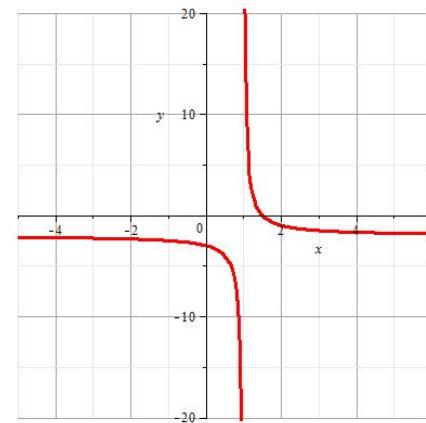
c)
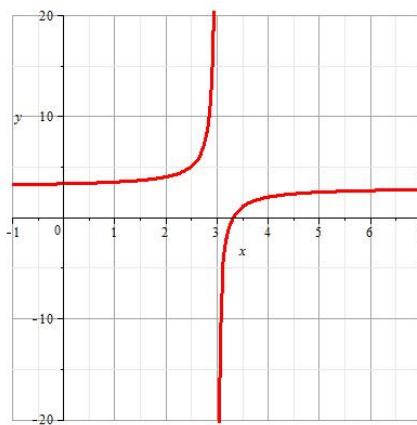
5.

a)
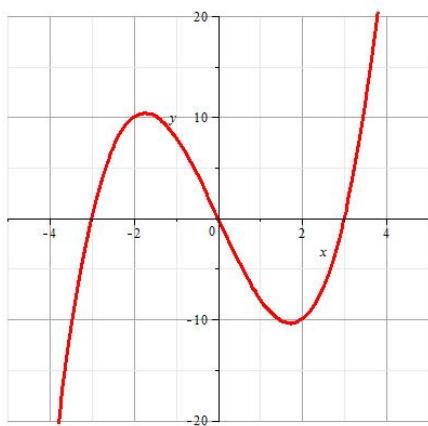
(i) $x = -3, 0, 3$

(ii) $y = 0$

(iii) - (iv)

Minimum at $(\sqrt{3}, -6\sqrt{3})$

Maximum at $(-\sqrt{3}, 6\sqrt{3})$

(v) Regions of increase:

$(-\infty, -\sqrt{3})$ and $(\sqrt{3}, \infty)$

Region of decrease: $(-\sqrt{3}, \sqrt{3})$

b)
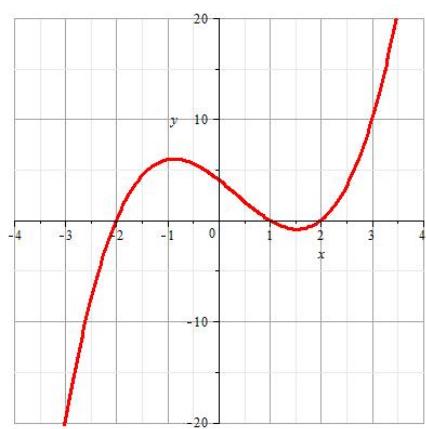
(i) $x = -2, 1, 2$

(ii) $y = 4$

(iii) - (iv)

Minimum at $(1.535, -0.879)$

Maximum at $(-0.869, 6.065)$

(v) Regions of increase:

$(-\infty, -0.869)$ and $(1.535, \infty)$

Region of decrease: $(-0.869, 1.535)$

c)
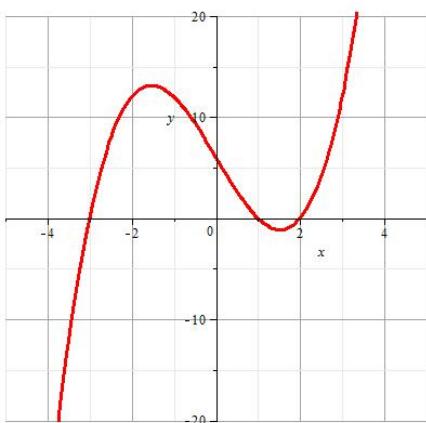
(i) $x = -3, 1, 2$
(ii) $y = 6$
(iii) - (iv)
Minimum at $(1.528, -1.128)$
Maximum at $(-1.528, 13.128)$
(v) Regions of increase:
$(-\infty, -1.528)$ and $(1.528, \infty)$
Region of decrease: $(-1.528, 1.528)$

d)
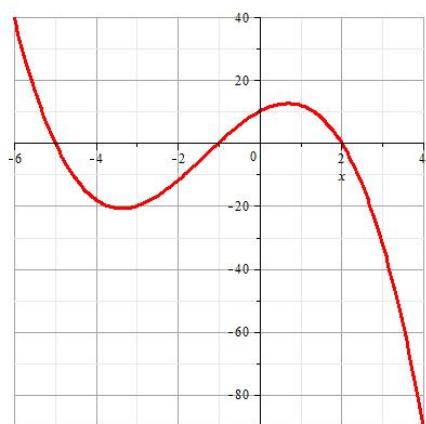
(i) $x = -5, -1, 2$
(ii) $y = 10$
(iii) - (iv)
Minimum at $(-3.361, -20.745)$
Maximum at $(0.694, 12.597)$
(v) Regions of decrease:
$(-\infty, -3.361)$ and $(0.694, \infty)$
Region of increase: $(-3.361, 0.694)$

e)
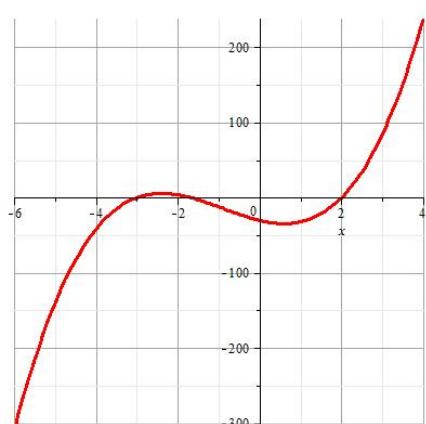
(i) $x = -3, -\frac{5}{3}, 2$
(ii) $y = -30$
(iii) - (iv)
Minimum at $(0.606, -34.272)$
Maximum at $(-2.384, 5.812)$
(v) Regions of increase:
$(-\infty, -2.384)$ and $(0.606, \infty)$
Region of decrease: $(-2.384, 0.606)$

f)
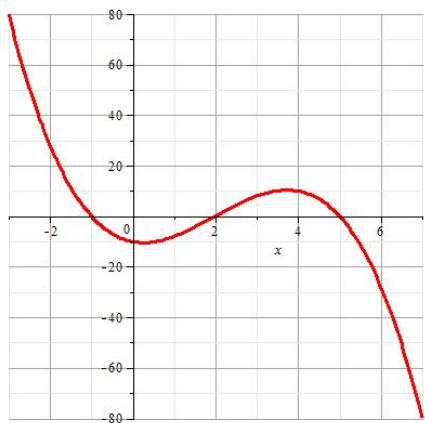
(i) $x = -1, 2, 5$

(ii) $y = -10$

(iii) - (iv)

Minimum at $(0.268, -10.392)$

Maximum at $(3.732, 10.392)$

(v) Regions of decrease:

$(-\infty, 0.268)$ and $(3.732, \infty)$

Region of increase: $(0.268, 3.732)$