

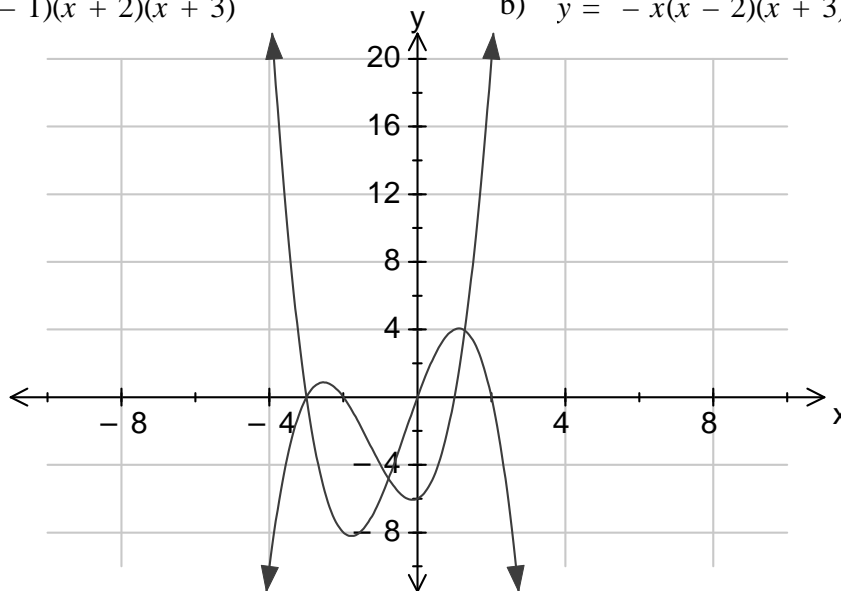
(C1-4.1a) Name:

Homework Questions 1 – Cubic Graphs

1. Plot the following graphs on the axis below

a) $y = (x - 1)(x + 2)(x + 3)$

b) $y = -x(x - 2)(x + 3)$



2. Find the y intercept of the following graphs

a) $y = (x + 4)(x - 2)(x + 6)$

Y intercept = -48

b) $y = x(x - 3)(x + 5)$

Y intercept = 0

c) $y = (x - 4)(x - 1)(x + 2)$

Y intercept = 8

d) $y = (x - 9)(3x + 2)(5x - 1)$

Y intercept = 18

3. Find the x intercepts of the following graphs

a) $y = (x - 6)(x - 4)(x - 2)$

X intercept = 2, 4, 6

b) $y = x(x + 3)(x - 5)$

X intercept = -3, 0, 5

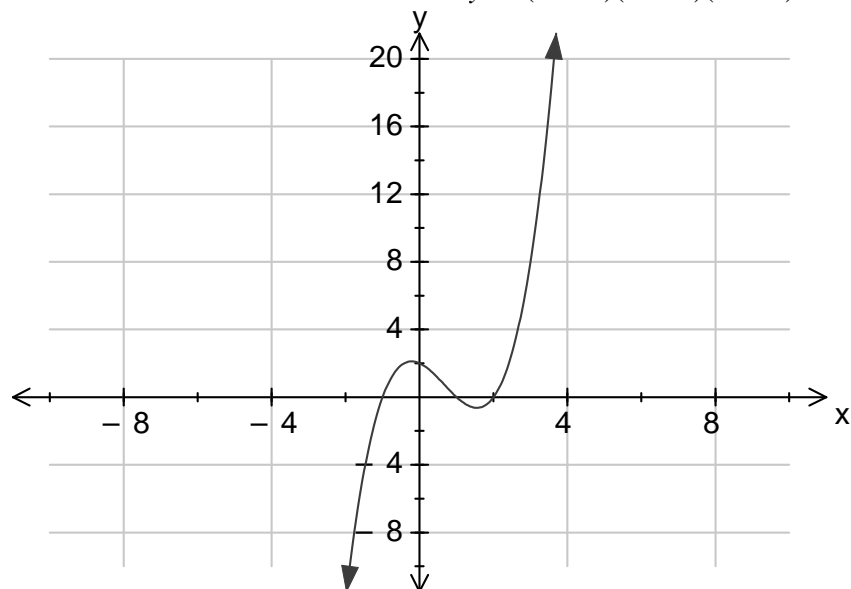
c) $y = (2x - 3)(x - 7)(7x - 2)$

X intercept = 0.286, 1.5, 7

d) $y = (3x + 2)(x - 4)(4x - 1)$

X intercept = -0.67, 0.25, 4

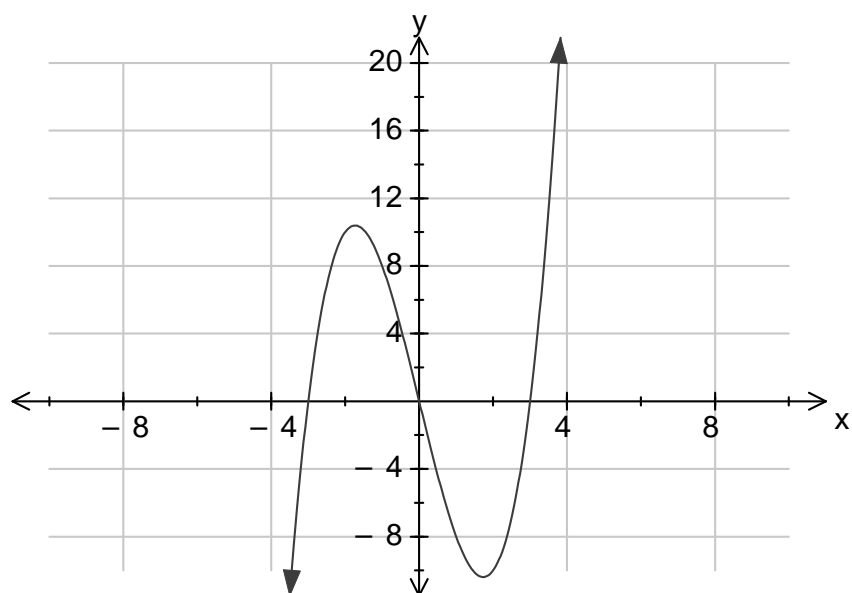
4. Draw the graph and state the special features of $y = (x - 2)(x - 1)(x + 1)$



Special Features

Intersection (-2,0) (1,0)(-1,0)(0,2) 2 Turning Points, 1 point of inflection

5. Draw the graph and state the special features of $y = x^3 - 9x$



Special Features

Intersection (-3,0)(3,0)(0,0) 2 Turning Points, 1 point of inflection

(C1-4.2a) Name:

Homework Questions 2 – Transformation of Cubic Graphs

The basic cubic graph is $y = x^3$ describe the transformation/s that has taken place to make the following graphs

a) $y = -x^3$

Reflection in y axis

b) $y = 4x^3$

4 times steeper

c) $y = x^3 + 5$

Up 5

d) $y = (x - 3)^3 - 4$

Right 3 and down 4

e) $y = \frac{2}{3}x^3$

2/3 steeper

f) $y = -(x + 6)^3$

Reflection in x axis left 6

g) $y = x^3 - 9$

Down 9

h) $y = x^3 - 2$

Down 2

i) $y = (x - 1)^3 - 3$

Right 1 and down 3

j) $y = -3(x + 5)^3 - 8$

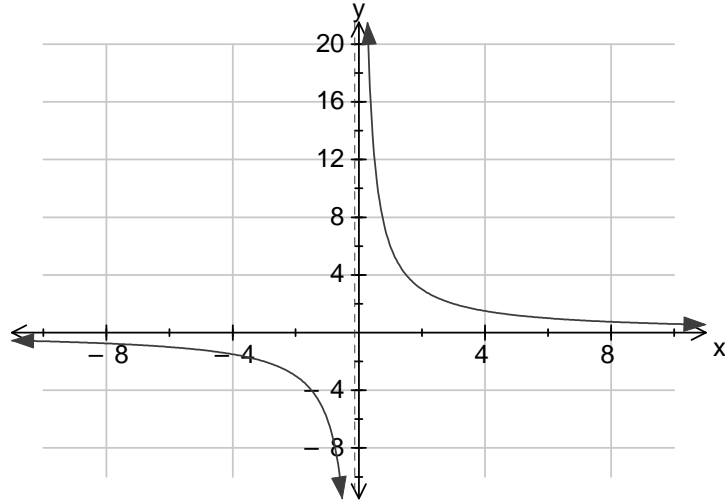
Reflection in x axis, left 5 and down 8, 3 times as steep

(C1-4.3a) Name:

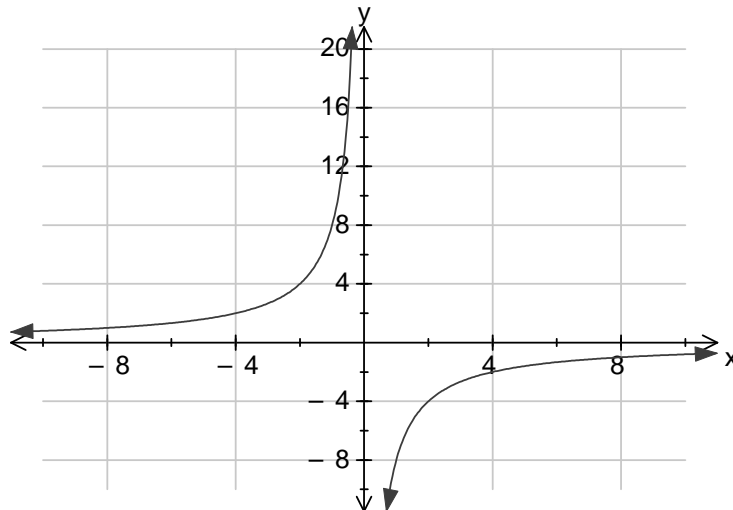
Homework Questions 3 – Hyperbola / Reciprocal Function

4. Plot the following graphs on the axis below

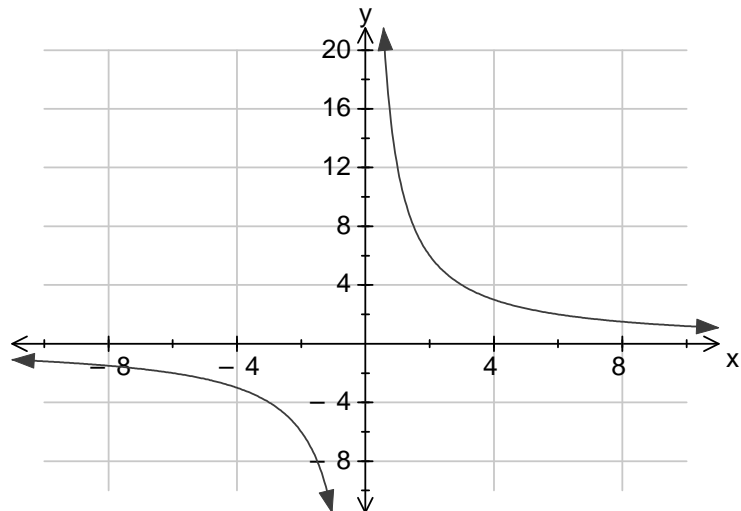
a) $y = \frac{6}{x}$



b) $y = -\frac{8}{x}$



c) $y = \frac{12}{x}$



(C1-4.4a) Name:

Homework Questions 4 – Sketching Curves to Find Intersections

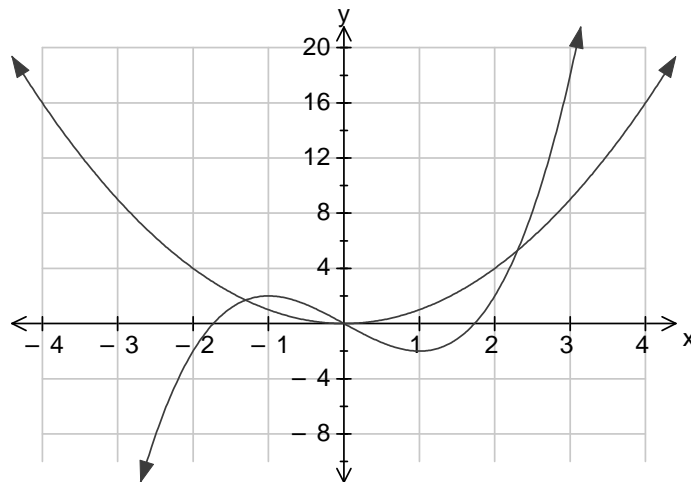
- Plot the following pairs of graphs on the axis below
- State the number of points of intersection
- Write down a suitable equation which would give the x coordinates of the point of Intersection
- Find the x coordinates of the points of intersection

a) $y = x^2$ $y = x(x^2 - 3)$

3 points of intersections

$$0 = x^3 - x^2 - 3x$$

$$X=0, -1.30, 2.3$$

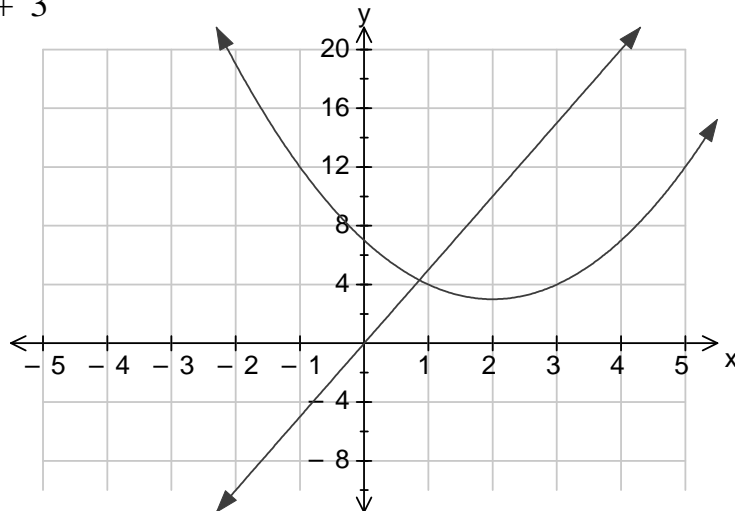


b) $y = 5x$ $y = (x - 2)^2 + 3$

1 point of intersection

$$x^2 + x + 7 = 0$$

$$X= 8.14, 0.86$$

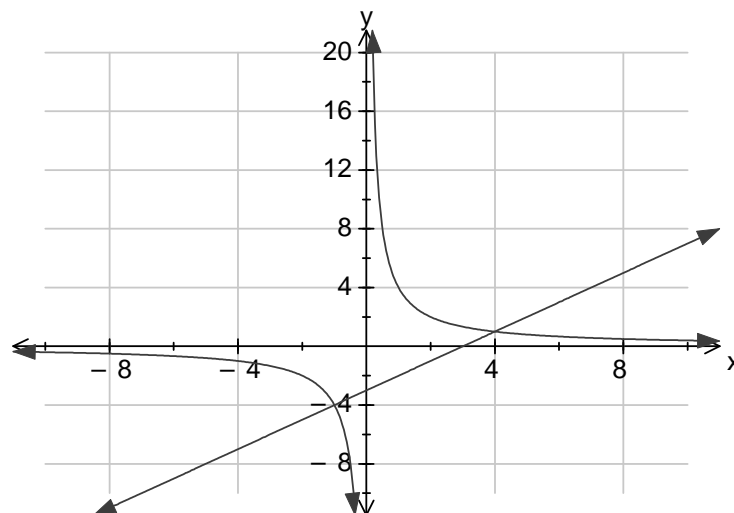


c) $y = \frac{4}{x}$ $y = x - 3$

2 points of intersection

$$0 = x^2 - 3x - 4$$

$$X= -1, 4$$

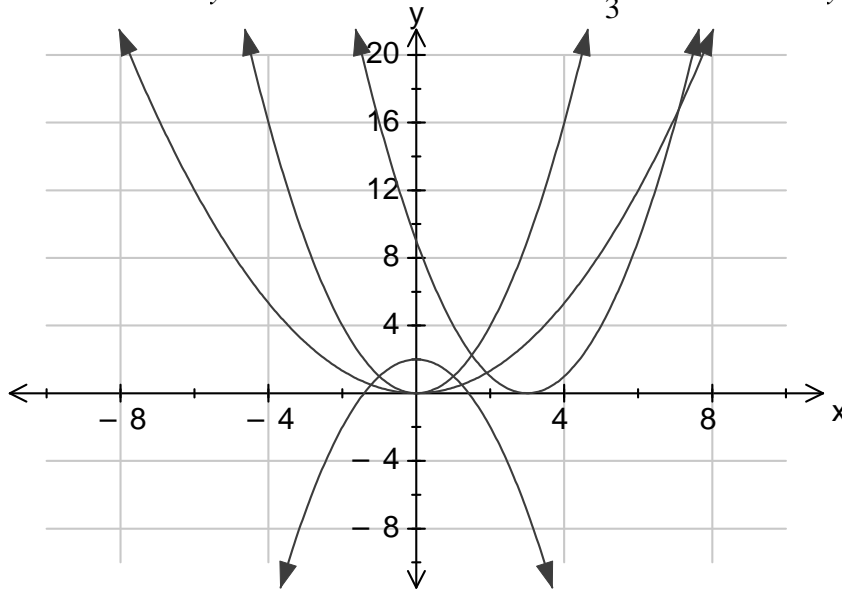


(C1-4.5a) Name:

Homework Questions 5 – Parabola Graphs

5. Plot the following graphs on the axis below

a) $y = x^2$ b) $y = -x^2 + 2$ c) $y = \frac{1}{3}x^2$ d) $y = (x - 3)^2$



6. Find the y intercept of the following graphs

a) $y = x^2 - 6$

Y intercept = -6

b) $y = (x - 3)^2$

Y intercept = 9

c) $y = -x^2 + 2$

Y intercept = 2

d) $y = -(x + 1)^2 + 3$

Y intercept = 2

7. Find the x intercept of the following graphs

a) $y = (x + 3)(x - 6)$

X intercept = -3, 6

b) $y = x(x + 9)$

X intercept = 0, -9

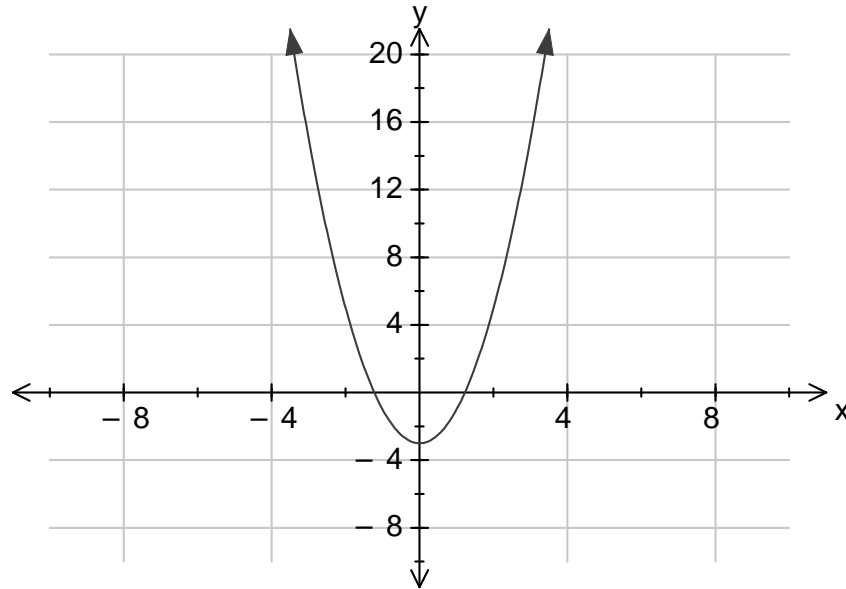
c) $y = x^2 + 7x + 12$

X intercept = -3, -4

d) $y = 3x^2 + 10x - 8$

X intercept = -4, 0.67

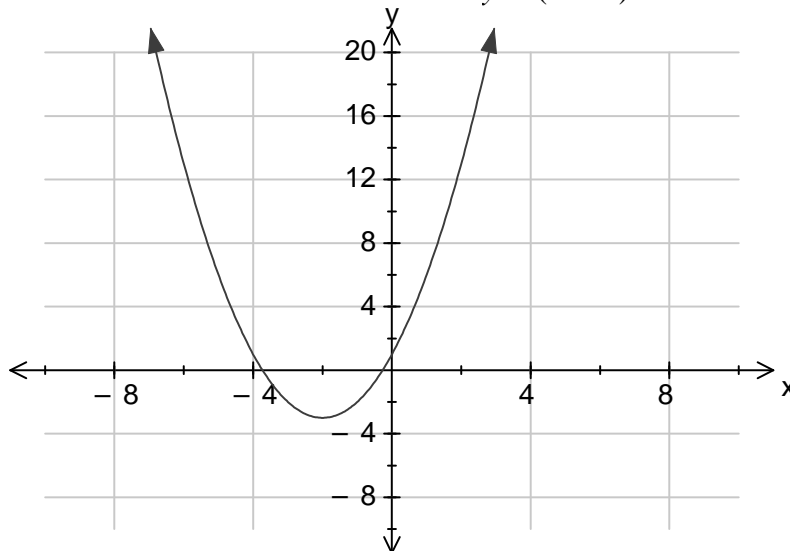
4. Draw the graph and state the special features of $y = 2x^2 - 3$



Special Features

Min TP (0,-3) Intersection (-1.2, 0) (1.2, 0) (0, -3) Line of symmetry $x=0$

5. Draw the graph and state the special features of $y = (x + 2)^2 - 3$



Special Features

Min TP (-2,-3) Intersection (-3.73,0) (-0.27, 0) (0,1) Line of symmetry $x = -2$

(C1-4.6a) Name:

Homework Questions 6 – Transformation of Parabolas Graphs

The basic Parabola graph is $y = x^2$ describe the transformation/s that has taken place to make the following graphs

a) $y = -x^2$

Reflection in x axis

b) $y = 3x^2$

3 times steeper

c) $y = x^2 - 5$

Down 5

d) $y = (x + 3)^2$

Left 3

e) $y = \frac{1}{5}x^2$

1/5 times steeper

f) $y = -(x - 2)^2$

Reflected in x axis and right 2

g) $y = x^2 + 8$

Up 8

h) $y = -6x^2 - 4$

Reflected in x axis, 6 times steeper and down 4

i) $y = (x + 3)^2 + 2$

Left 3 and Up 2

j) $y = -3(x - 4)^2 - 6$

Reflected in x axis, 3 times steeper, right 4 and down 6

(C1-4.7a) Name:

Homework Questions 7 – Transformation of Any Graphs

1. The curve with equation $y=f(x)$ passes through the points A(1,2) B(2,10) and C(-4,46). Give the coordinates of A,B&C after the following transformations

a) $f(x - 2)$

A(3,2) B(4,10) C(-2,46)

(Right 2 so x coordinate +2)

b) $f(x) - 4$

A(1,-2) B(2,6) C(-4,42)

(Down 4 so y coordinate -4)

c) $3f(x)$

A(1,6) B(2,30) C(-4,138)

(3 times steeper so y coordinate multiplied by 3)

d) $-f(2x)$

A(1, -8) B(2, -40) C(-4, -184)

(Turned upside down and 2 times as wide so y coordinate becomes negative and is multiplied by 4)

2. The reciprocal function has the equation $y = \frac{4}{x} - 3$ State the equation of the asymptotes

after the following transformations

e) $f(x - 4)$

$x = 4$ $y = -3$

f) $f(x) + 1$

$x = 0$ $y = -2$

g) $f(x + 2) - 3$

$x = -2$ $y = -6$

h) $y = (x - 1) + 7$

$x = 1$ $y = 4$