

Name _____ blk. _____ Sketch each of the following graphs:

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

Information to help with the graph.

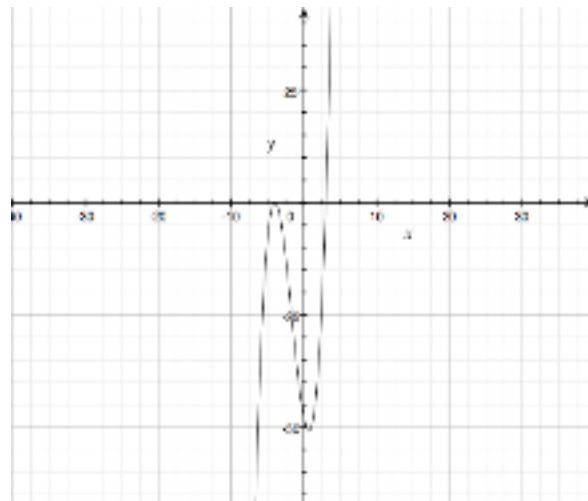
x-intercept(s) +3, -4

y-intercept -48

Degree 3

Positive or negative

End behavior _____ ↙ ↗



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

Information to help with the graph.

x-intercept(s) +1, -3

y-intercept -9

Degree 5

Positive or negative

End behavior _____ ↙ ↗



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

Information to help with the graph.

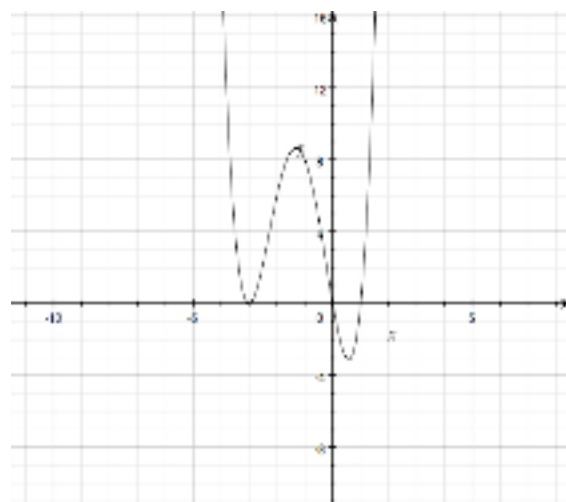
x-intercept(s) 0, 1, -3

y-intercept 0

Degree 5

Positive or negative

End behavior _____ ↖ ↗



4) $y = x^2(x + 6)(x + 4)^2$

Information to help with the graph.

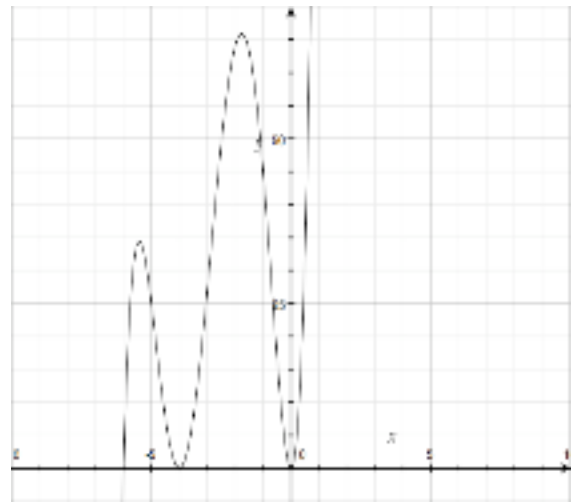
x-intercept(s) 0, -6, -4

y-intercept 0

Degree 5

Positive or negative

End behavior _____ ↙ ↗



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

Information to help with the graph.

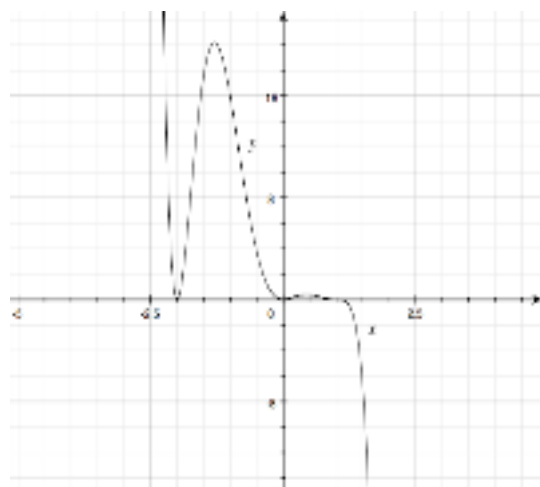
x-intercept(s) 0, 1, -2

y-intercept 0

Degree 7

Positive or negative

End behavior _____ ↗ ↘



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

Information to help with the graph.

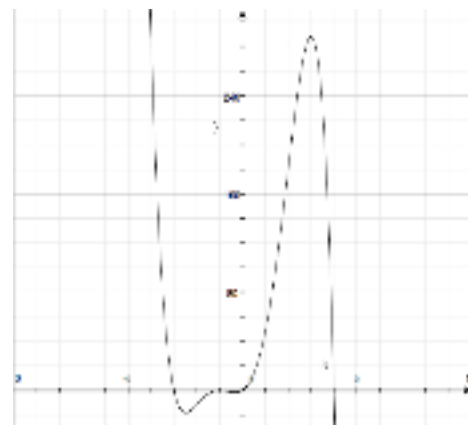
x-intercept(s) 0, 4, -1, -3

y-intercept 0

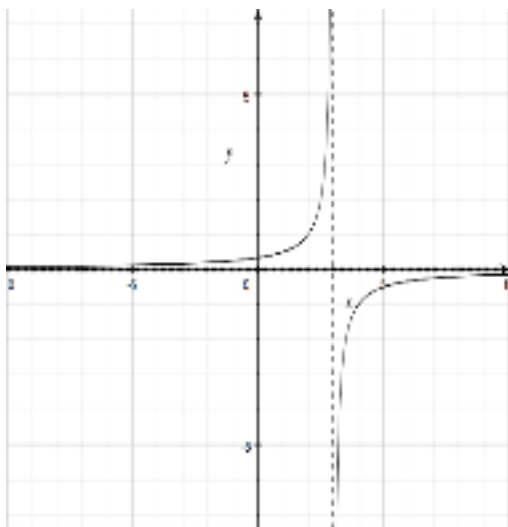
Degree 5

Positive or negative

End behavior _____ ↗ ↘



$$7) y = \frac{1}{(x-3)}$$



Information to help with the graph.

x-intercept(s) DNE

y-intercept $-1/3$

Degree
numerator 0

denominator 1

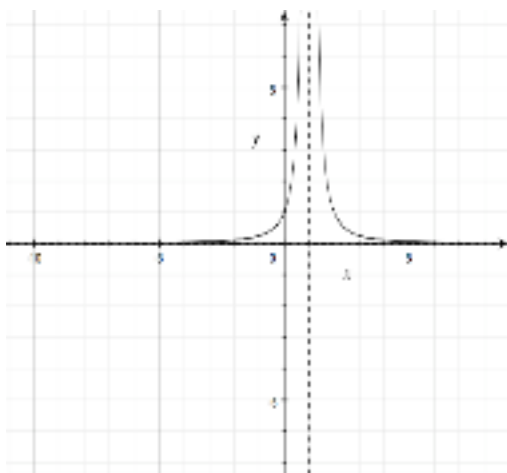
HA $y = 0$

VA $x = 3$

crosses the HA DNE

Hole(s) DNE

$$8) y = \frac{1}{(x-1)^2}$$



Information to help with the graph.

x-intercept(s) DNE

y-intercept 1

Degree
numerator 0

denominator 2

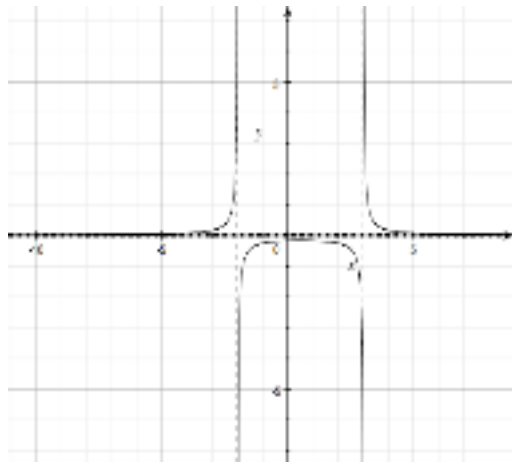
HA $y = 0$

VA $x = 1$

crosses the HA DNE

Hole(s) DNE

$$9) y = \frac{1}{(x-3)(x+2)}$$



Information to help with the graph.

x-intercept(s) DNE

y-intercept $-\frac{1}{6}$

Degree

numerator 0

denominator 2

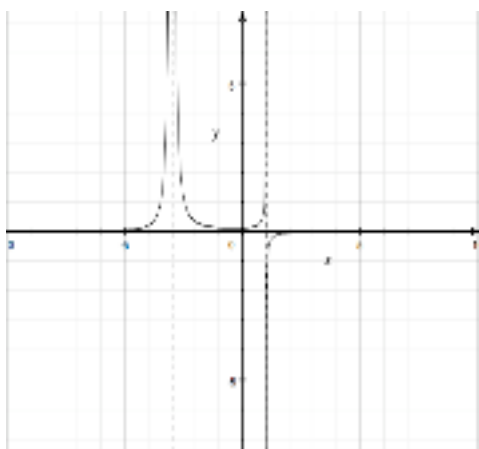
HA $y = 0$

VA $x = -2, 3$

crosses the HA DNE

Hole(s) DNE

$$10) y = \frac{-1}{(x-1)(x+3)^2}$$



Information to help with the graph.

x-intercept(s) DNE

y-intercept $\frac{1}{9}$

Degree

numerator 0

denominator 3

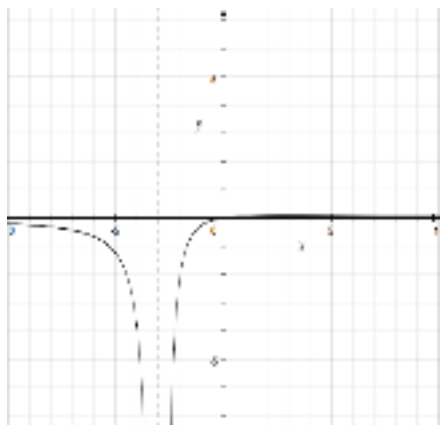
HA $y = 0$

VA $x = -3, 1$

crosses the HA DNE

Hole(s) DNE

$$11) y = \frac{x}{(x+3)^2}$$



Information to help with the graph.

x-intercept(s) 0

y-intercept 0

Degree

numerator 1

denominator 2

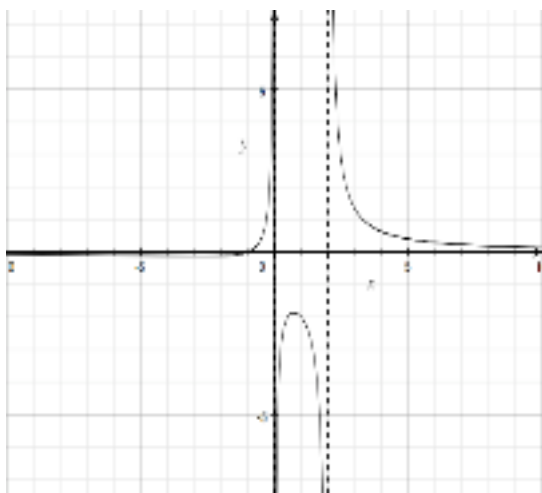
HA $y = 0$

VA $x = -3$

crosses the HA $x = 0$

Hole(s) DNE

$$12) y = \frac{(x+1)}{x(x-2)}$$



Information to help with the graph.

x-intercept(s) -1

y-intercept DNE

Degree

numerator 1

denominator 2

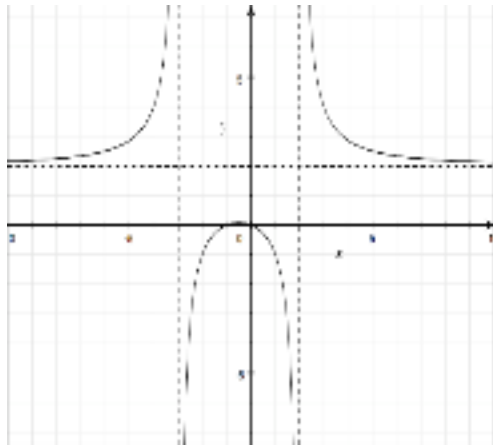
HA $y = 0$

VA $x = 0, 2$

crosses the HA $x = -1$

Hole(s) DNE

$$13) y = \frac{2x(x+1)}{(x+3)(x-2)}$$



Information to help with the graph.

x-intercept(s) 0, -1

y-intercept 0

Degree

numerator 2

denominator 2

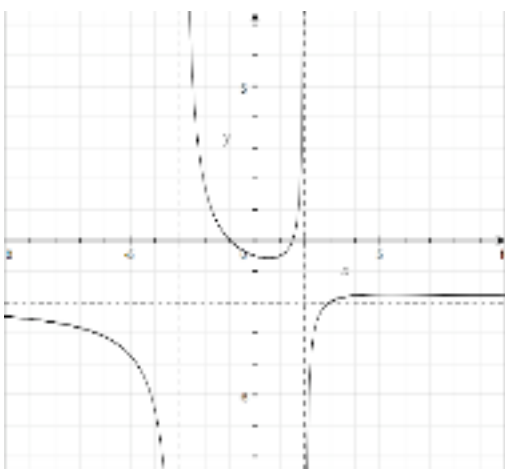
HA $y = 2$

VA $x = -3, 2$

crosses the HA DNE

Hole(s) DNE

$$14) y = \frac{-(2x-3)(x+1)}{(x+3)(x-2)}$$



Information to help with the graph.

x-intercept(s) $3/2, -1$

y-intercept $-1/2$

Degree

numerator 2

denominator 2

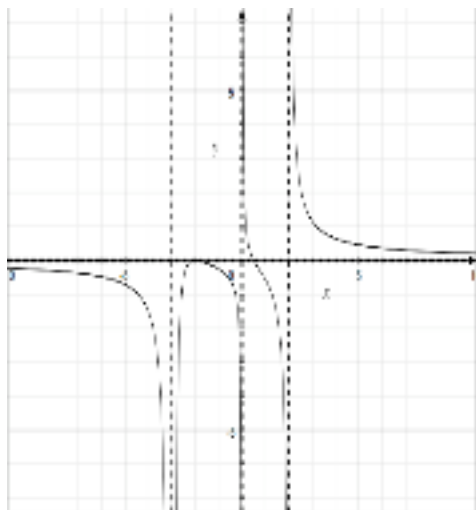
HA $y = -2$

VA $x = -3, +2$

crosses the HA $x = 3/2$

Hole(s) DNE

$$15) y = \frac{(2x-1)(x+2)^2}{x(x+3)^2(x-2)}$$



Information to help with the graph.

x-intercept(s) $1/2, -2$

y-intercept DNE

Degree

numerator 3

denominator 4

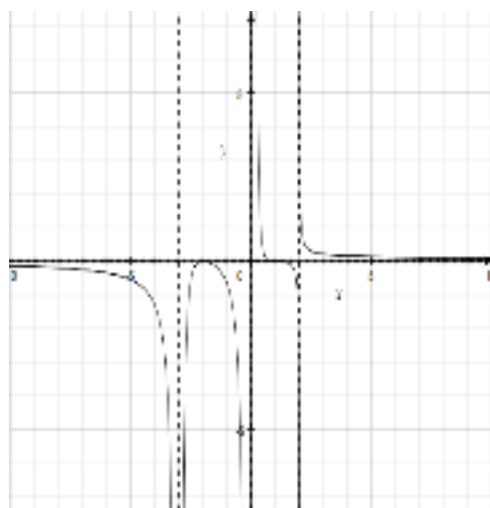
HA $y = 0$

VA $x = 0, -3, 2$

crosses the HA $x = 1/2, -2$

Hole(s) DNE

$$16) y = \frac{(x-1)^3(x+2)^2}{x^3(x+3)^2(x-2)}$$



Information to help with the graph.

x-intercept(s) $1, -2$

y-intercept DNE

Degree

numerator 5

denominator 6

HA $y = 0$

VA $x = 0, -3, 2$

crosses the HA $x = 1, -2$

Hole(s) DNE

$$17) y = \frac{-3x(x-4)(x+2)^2}{(x+3)^3(x-2)}$$



Information to help with the graph.

x-intercept(s) 0, -2, 4

y-intercept 0

Degree

numerator 4

denominator 4

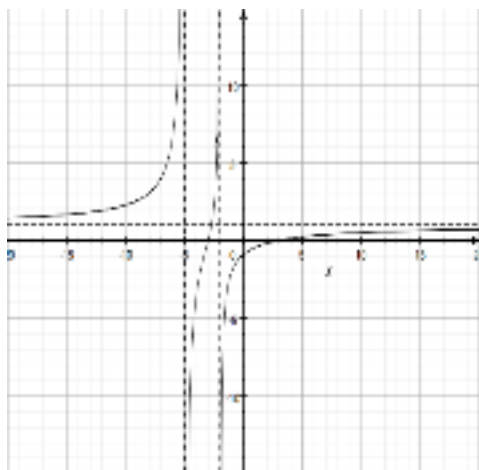
HA $y = -3$

VA $x = -3, 2$

crosses the HA approx. 1.5

Hole(s) DNE

$$18) y = \frac{x^2 - 9}{x^2 + 7x + 10}$$



Information to help with the graph.

x-intercept(s) -3, 3

y-intercept $-9/10$

Degree

numerator 2

denominator 2

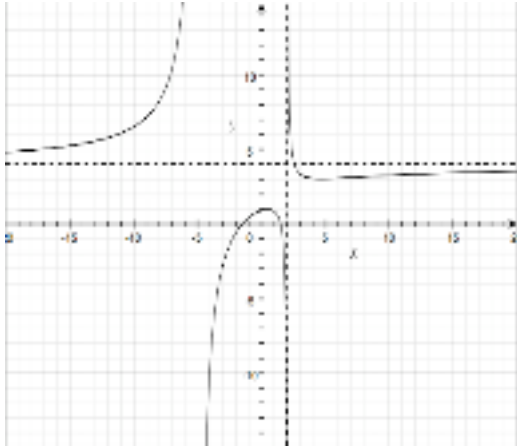
HA $y = 1$

VA $x = -5, -2$

crosses the HA $x = -19/7$

Hole(s) DNE

$$19) y = \frac{4x^2 - 9}{x^2 + 3x - 10}$$



Information to help with the graph.

x-intercept(s) $\pm 2/3$

y-intercept $9/10$

Degree

numerator 2

denominator 2

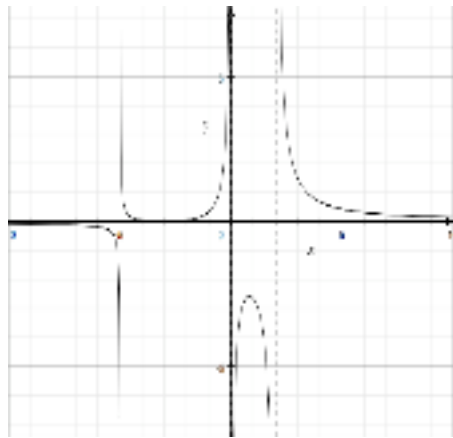
HA $y = 4$

VA $x = -5, 2$

crosses the HA $x = 49/12$

Hole(s) DNE

$$20) y = \frac{x^2 + 6x + 9}{x^3 + 3x^2 - 10x}$$



Information to help with the graph.

x-intercept(s) -3

y-intercept DNE

Degree

numerator 2

denominator 3

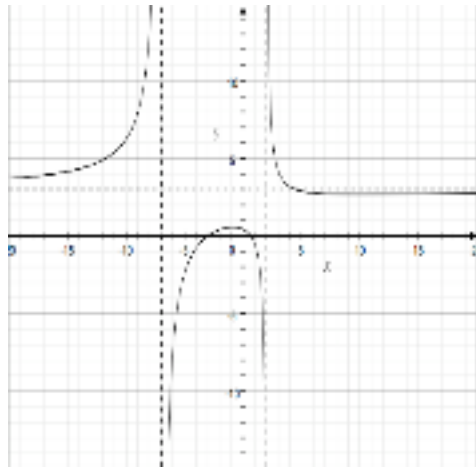
HA $y = 0$

VA $x = 0, -5, 2$

crosses the HA $x = -3$

Hole(s) DNE

$$21) y = \frac{3x^2 + 7x - 6}{x^2 + 5x - 14}$$



Information to help with the graph.

x-intercept(s) $2/3, 3$

y-intercept $3/7$

Degree

numerator 2

denominator 2

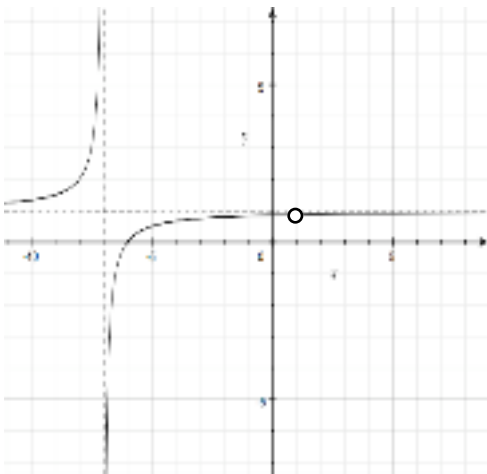
HA $y = 3$

VA $x = -7, 2$

crosses the HA $x = 9/2$

Hole(s) DNE

$$22) y = \frac{x^2 + 5x - 6}{x^2 + 6x - 7}$$



Information to help with the graph.

x-intercept(s) -6

y-intercept $6/7$

Degree

numerator 2

denominator 2

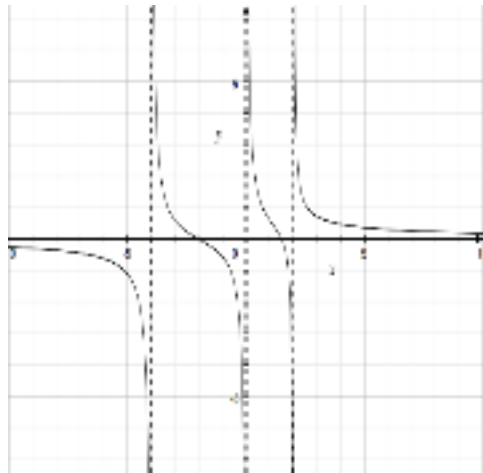
HA $y = 1$

VA $x = -7$

crosses the HA DNE

Hole(s) $x = 1$

$$23) y = \frac{2x^2 + x - 6}{x^3 + 2x^2 - 8x}$$



Information to help with the graph.

x-intercept(s) $\frac{3}{2}, -2$

y-intercept DNE

Degree

numerator 2

denominator 3

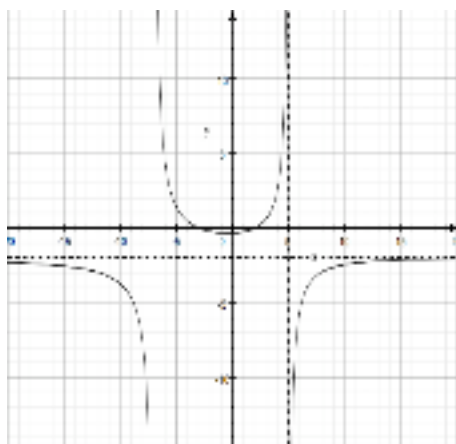
HA $y = 0$

VA $x = 0, -4, 2$

crosses the HA $x = \frac{3}{2}, -2$

Hole(s) DNE

$$24) y = \frac{-2(x^2 + x - 6)}{x^2 + 2x - 35}$$



Information to help with the graph.

x-intercept(s) $-3, 2$

y-intercept $-\frac{12}{35}$

Degree

numerator 2

denominator 2

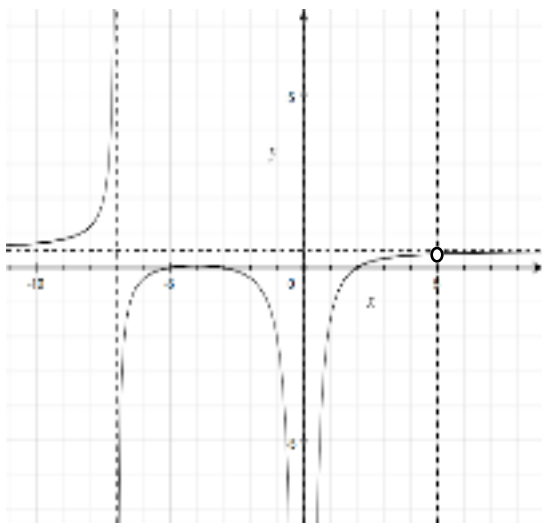
HA $y = -2$

VA $x = -7, 5$

crosses the HA $x = 29$

Hole(s) DNE

$$25) y = \frac{(x^2 - 25)(x^2 + x - 6)}{2x^2(x^2 + 2x - 35)}$$



Information to help with the graph.

x-intercept(s) $-5, -3, 2$

y-intercept DNE

Degree

numerator 3

denominator 3

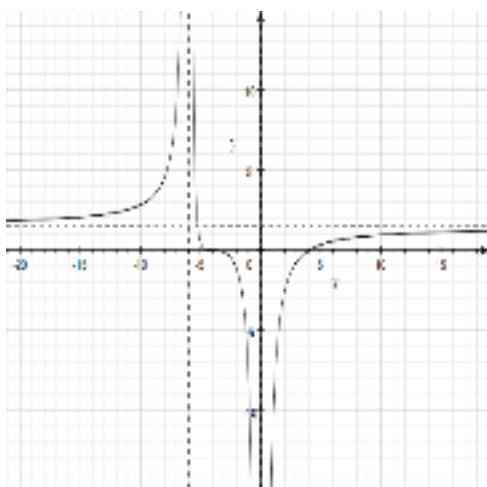
HA $y = 1/2$

VA $x = 0, -7$

crosses the HA DNE

Hole(s) $x = 5$

$$26) y = \frac{3(x^2 - 16)(x^2 + 8x + 16)}{2x^2(x^2 + 12x + 36)}$$



Information to help with the graph.

x-intercept(s) $-4, 4$

y-intercept DNE

Degree

numerator 4

denominator 4

HA $y = 3/2$

VA $x = 0, -6$

crosses the HA approx. $x = -5.2$

Hole(s) DNE