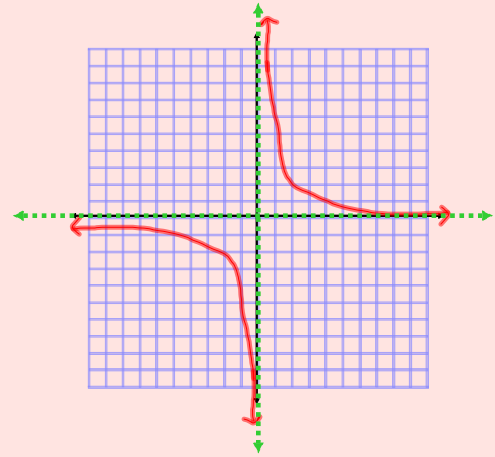


SAT

If $x + y = 3$ and $x - y = 5$, then $x^2 - y^2 = \underline{\hspace{2cm}}$

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Rational Functions



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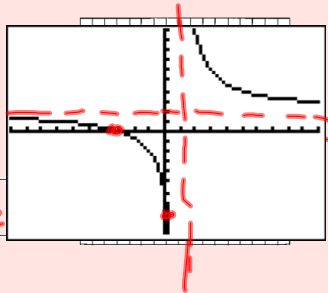
1. $f(x) = \frac{2x+6}{x-1}$

y-intercept: $(0, -6)$

x-intercept: $(-3, 0)$

Vertical asymptote: $x=1$

Horizontal asymptote: $y=2$



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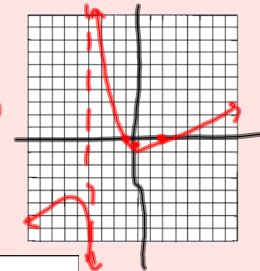
2. $f(x) = \frac{x^2-x-2}{3x+12}$

y-intercept: $(0, \frac{1}{6})$

x-intercept: $(2, 0)$ or $(-1, 0)$

Vertical asymptote: $x=-4$

Horizontal asymptote: none



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4.

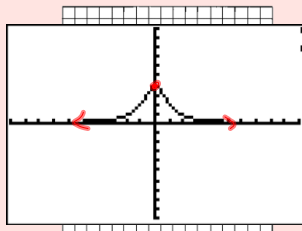
$f(x) = \frac{4}{x^2+1}$

y-intercept: $(0, 4)$

x-intercept: none

Vertical asymptote: none

Horizontal asymptote: $y=0$



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4. $f(x) = \frac{x^2-9}{x^2-3x-10}$

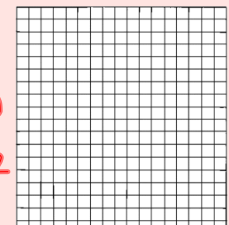
y-intercept: $(0, \frac{9}{10})$

x-intercept: $(-3, 0)$ or $(3, 0)$

Vertical asymptote: $x=5, x=-2$

Horizontal asymptote: $y=1$

$(x-5)(x+2)=0$



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5. $f(x) = \frac{x^2 + 3x - 10}{x - 2} = \frac{(x+5)(x-2)}{(x-2)}$

y-intercept: $(0, 5)$

$x^2 + 3x - 10 = 0$
 $(x+5)(x-2) = 0$

x-intercept: ~~$(2, 0)$~~ or $(-5, 0)$

Vertical asymptote: ~~$x=2$~~ none

Note in graph: $x=2$

Horizontal asymptote: none

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6. $f(x) = \frac{(x-4)(x-2)}{x(x-3)(x-4)}$

y-intercept: none

$x=0$

x-intercept: ~~$(4, 0)$~~ $(2, 0)$

Vertical asymptote: ~~$x=3, x=4$~~

Horizontal asymptote: $y=0$

Note: $x=4$

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