

April 20, 2016
 * Final Exam - Next Friday

Apr 20-11:04 AM

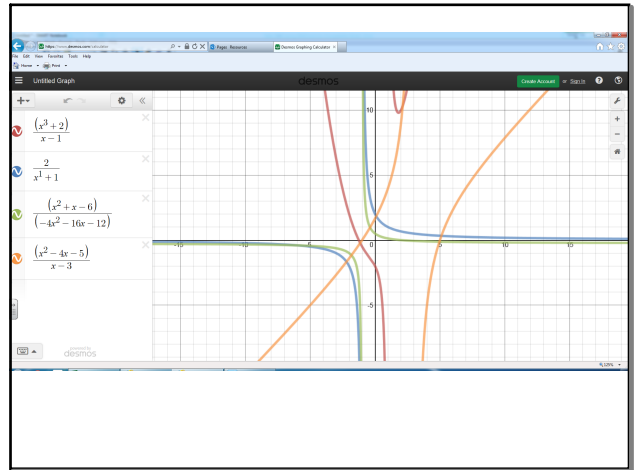
Horizontal Asymptotes

- (Degree of numerator > Degree of Denominator)
 no Horizontal Asymptote
 $f(x) = \frac{x^3 + 2}{x - 1}$ D: 3
 D: 1
- (D of N < D of D) $y = 0$
- (D of N = D of D)
 $y = \frac{\text{Coefficient of leading term}}{\text{Coefficient of leading term}}$

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Slant
 D of numerator is one D greater than Denominator

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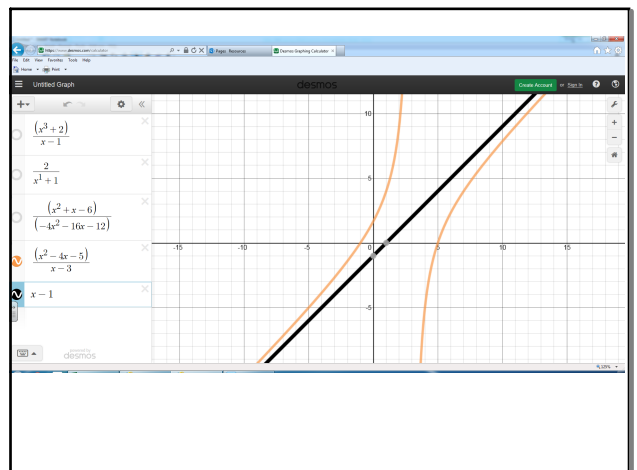
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Finding a slant asymptote
 $f(x) = \frac{x^2 - 4x - 5}{x - 3}$

①
$$\begin{array}{r} 3 \overline{) 1 \quad -4 \quad -5} \\ \underline{3 } \\ 1 \quad -1 \quad -8 \end{array}$$

$x - 1$ ← Remainder
 $\frac{8}{x - 3}$
 $q(x) \downarrow$
 $y = x - 1$

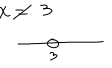
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$$f(x) = \frac{x^2 - 4x - 5}{x - 3} = \frac{(x-5)(x+1)}{x-3} = 0$$

x -int: $(5, 0) \cup (-1, 0)$
 y -int: $(0, 3) \leftarrow$ Singularity
 V.A.: $x = 3$
 H.A.: none
 S.A.: $y = x - 1$



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$$f(x) = \frac{-x^2 + 3x}{2x^2 - 4x - 6} = 0$$

$$(x-3)(2x+2) = 0$$

$x = 3$ or $2x + 2 = 0$
 $x = -1$

$a = -1$, $c = -4$
 $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
 $2x^2 - 6x + 2x - 6$
 $2x(x-3) + 2(x-3)$

V.S.: $x = 3 \cup x = -1$
 H.S.: $y = -\frac{1}{2}$
 S.A.: none

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