

Cálculo 20. Semestre B-2015

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2. Representación gráfica de funciones

Analice y grafique las funciones cuyas reglas son las siguientes:

(1) Funciones algebraicas

Problema 1 — Polinómicas.

1. $f(x) = x^4 - 12x^3 + 48x^2 - 64x$

2. $f(x) = x^3 + x^2 - 5x - 5$

3. $f(x) = x^3 - 12x$

4. $f(x) = x^3 - 6x^2 + 9x - 4$

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

6. $f(x) = x^3 - 3x^2 + 4$

7. $f(x) = 1/4 x^4 - 3/2 x^2$

8. $f(x) = x^5 - 5x^3$

Problema 2 — Racionales.

9. $f(x) = \frac{2}{x^2 - 1}$

10. $f(x) = \frac{x}{1 - x^2}$

11. $f(x) = \frac{4x}{x^2 + 9}$

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

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

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

15. $f(x) = \frac{x^2}{9 - x^2}$

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

17. $f(x) = -\frac{3x^2}{1 + x^2}$

Problema 3 — Irracionales.

18. $f(x) = x\sqrt{25 - x^2}$

19. $f(x) = \frac{x^2}{\sqrt{x^2 - 1}}$

20. $f(x) = \frac{x}{\sqrt{x^2 + 1}}$

21. $f(x) = \sqrt{\frac{x}{x - 2}}$

22. $f(x) = \frac{x}{\sqrt[3]{x^2 - 1}}$

23. $f(x) = (x^2 - x^3)^{1/3}$

(2) Funciones trascendentes**Problema 4** — Logaritmicas.

24. $f(x) = x - \ln(x)$

25. $f(x) = \frac{\ln(x)}{x}$

26. $f(x) = \frac{x}{\ln(x)}$

27. $f(x) = x \ln^2(x)$

28. $f(x) = (x+1) \ln^2(x+1)$

29. $f(x) = x \ln(x)$

30. $f(x) = \log_2(x^2 + 1)$

31. $f(x) = x^2 \ln\left(\frac{1}{x}\right)$

Problema 5 — Exponenciales.

32. $f(x) = xe^{-x}$

33. $f(x) = e^{-x^2}$

34. $f(x) = x^2 e^{-x}$

35. $f(x) = \frac{e^x}{x}$

36. $f(x) = \frac{e^x}{x^2}$

37. $f(x) = 2xe^{-\frac{1}{2}x^2}$

Problema 6 — Trigonometricas.

38. $f(x) = \sin(x) \cos(x)$

39. $f(x) = \sin(x) + \cos(x)$

40. $f(x) = e^{-x} \sin(x), x \in [-\pi, \pi]$

41. $f(x) = e^{-x} \cos(x), x \in [-\pi, \frac{3\pi}{2}]$

42. $f(x) = 2 \sin(x) - \sin(2x)$

43. $f(x) = \sin(x) + \sin(2x)$

Extremos Absolutos**Problema 7** — Hallar los extremos absolutos de la función en el intervalo cerrado.

1. $f(x) = x^2 - 2x, [0, 4]$

2. $f(x) = x^3 - 12x, [0, 4]$

3. $f(x) = \frac{x^2}{x^2+3}, [-1, 1]$

4. $f(x) = \frac{2x}{x^2+1}, [-2, 2]$

5. $f(x) = \frac{1}{x-2}, [0, 1]$

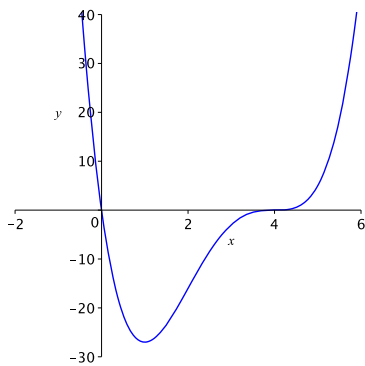
6. $f(x) = \llbracket 2 - x \rrbracket, [-2, 2].$

7. $f(x) = 3 - |x - 3|, [-1, 5]$

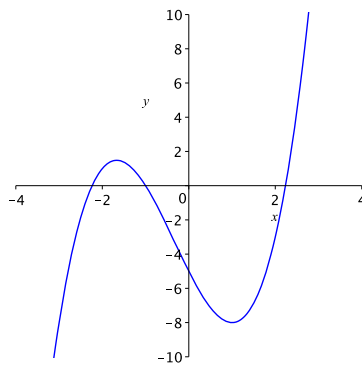
8. $f(x) = \frac{1}{1+|x+1|}, [-3, 3]$

Gráficos de las funciones algebraicas y transcendentales

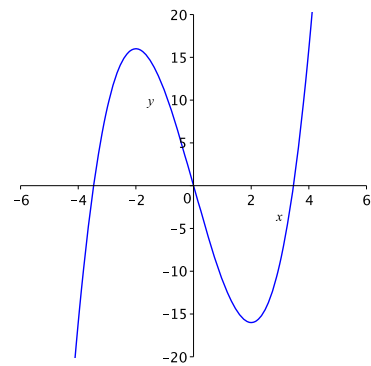
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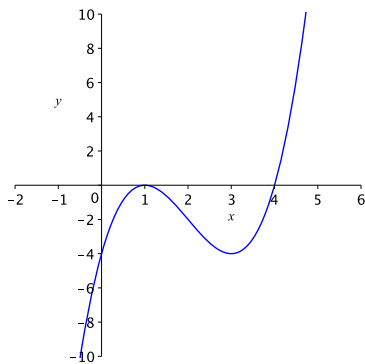
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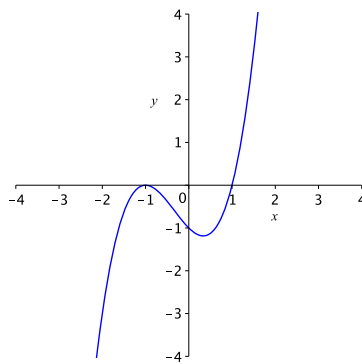
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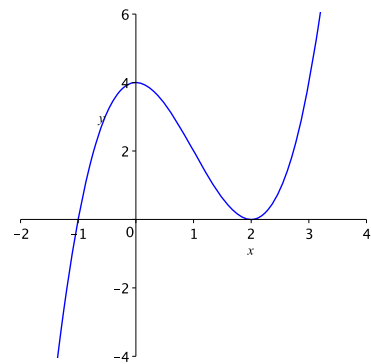
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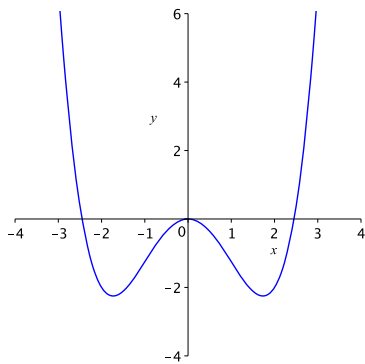
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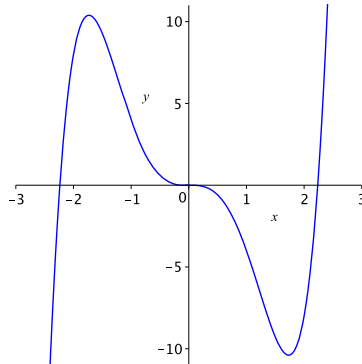
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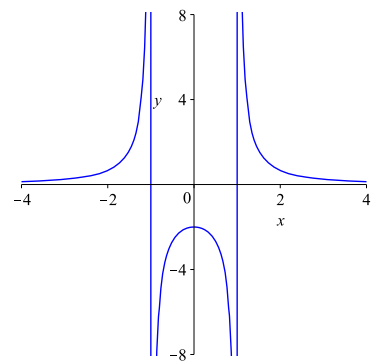
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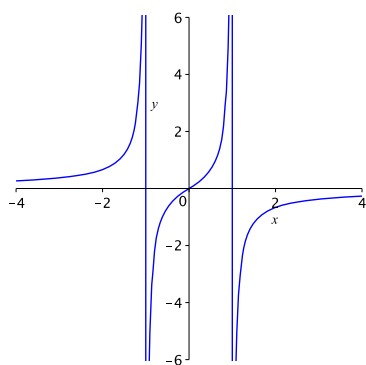
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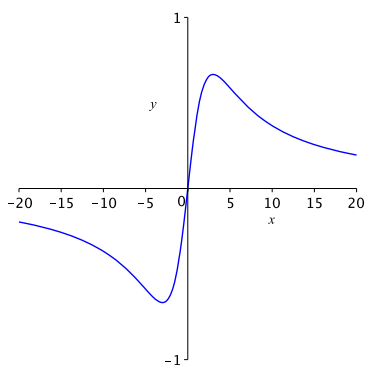
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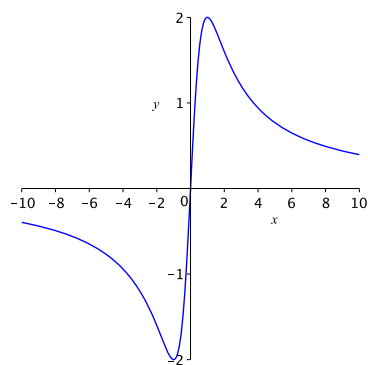
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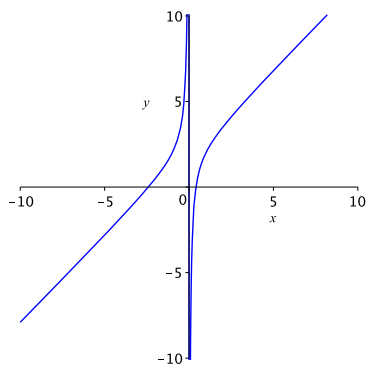
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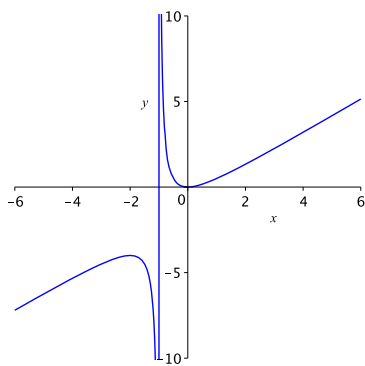
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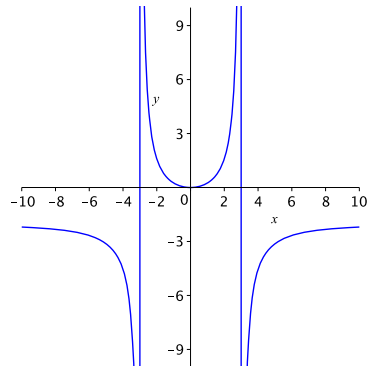
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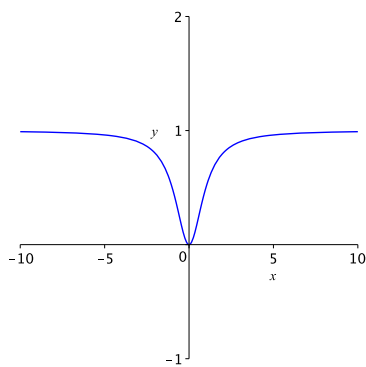
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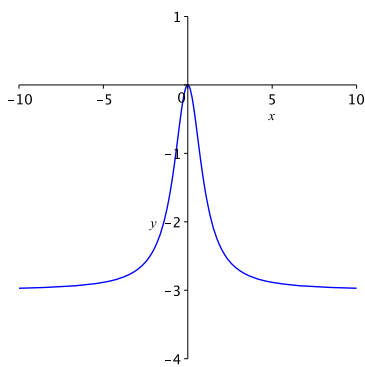
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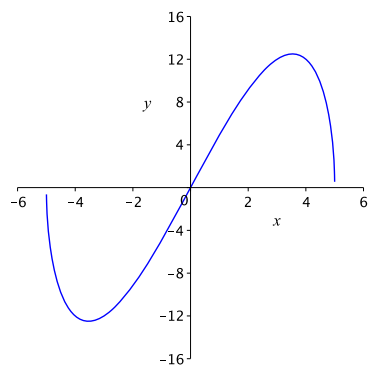
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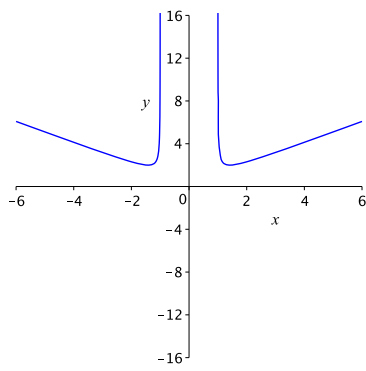
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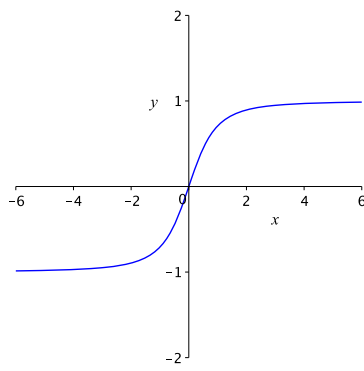
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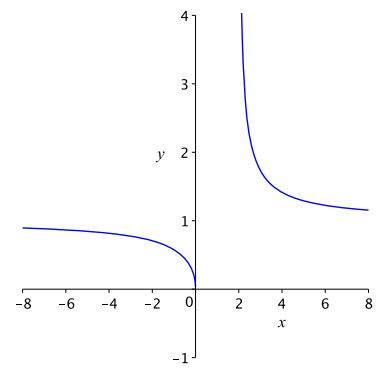
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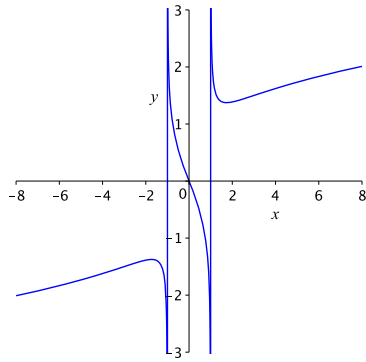
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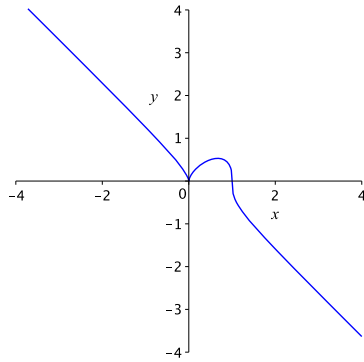
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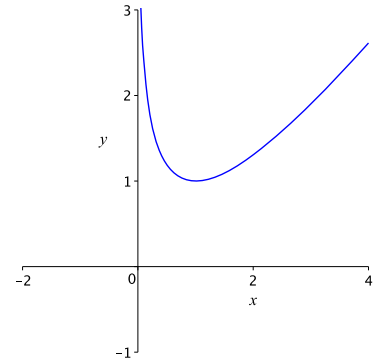
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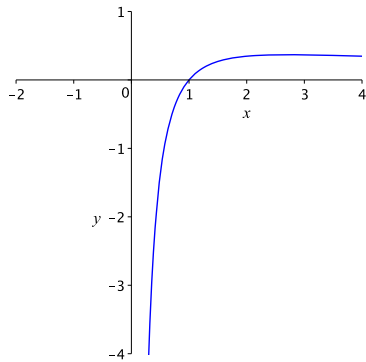
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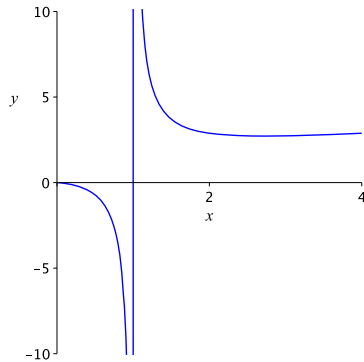
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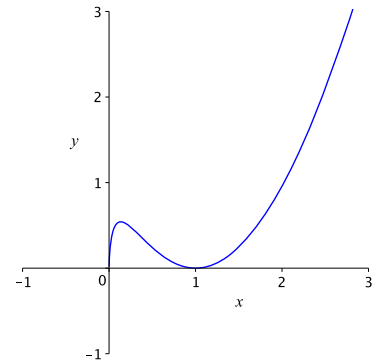
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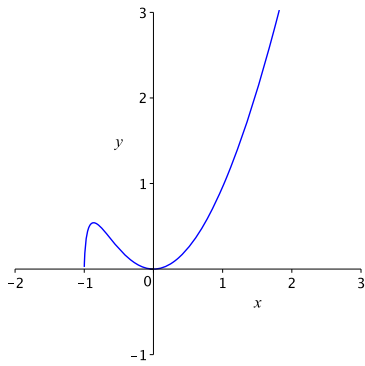
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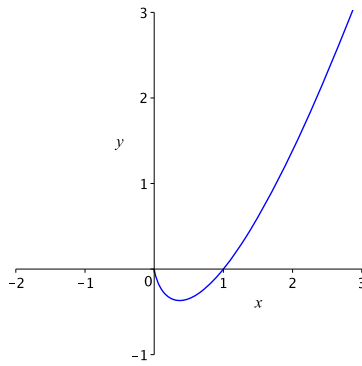
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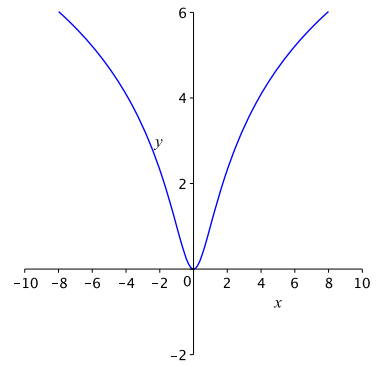
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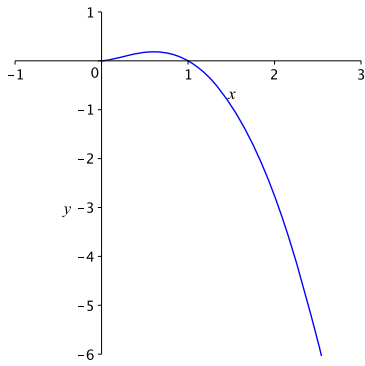
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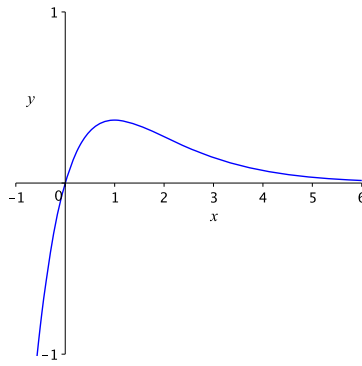
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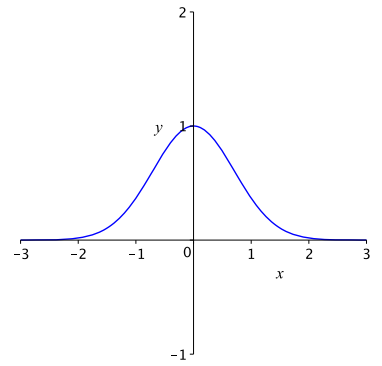
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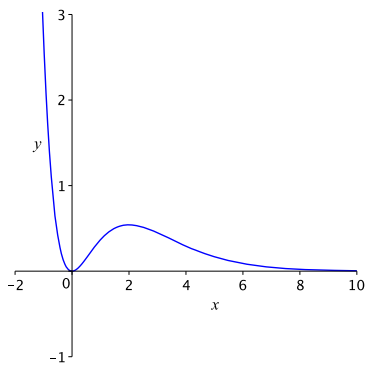
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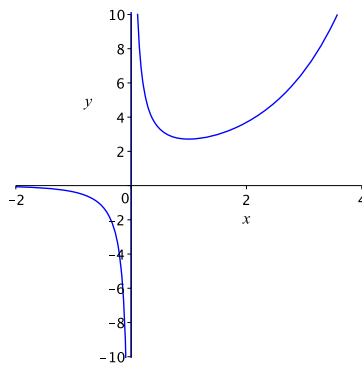
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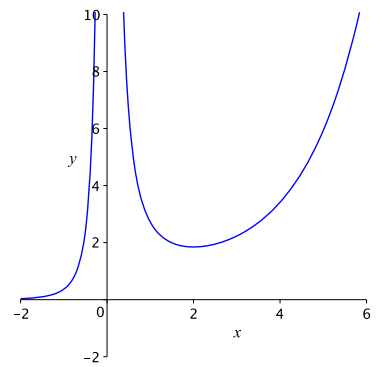
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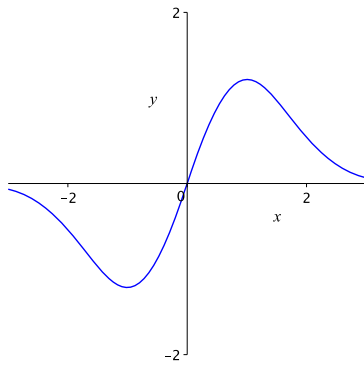
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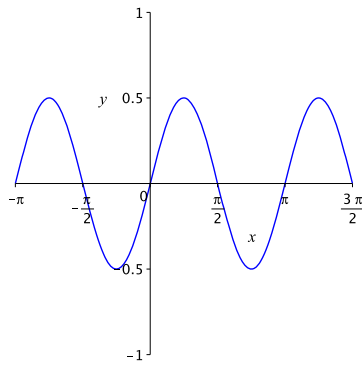
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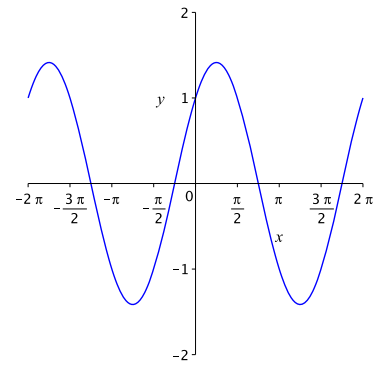
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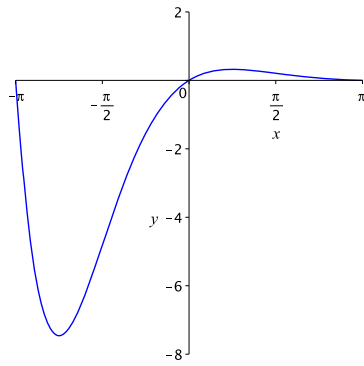
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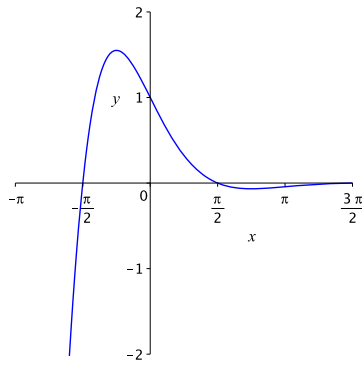
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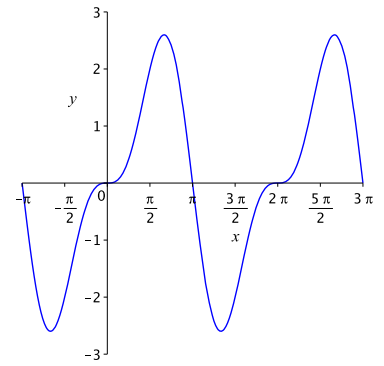
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