

Matematica ed elementi di statistica  
Corso di laurea in Scienze e tecnologie per i beni culturali - a.a. 2014-15  
Esercizi 9: Studio di funzioni

Funzioni razionali fratte: Studiare le seguenti funzioni fino alla derivata prima, tracciarne il grafico ed indicare gli eventuali punti di minimo e massimo.

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

$$2. f(x) = \frac{x^2-16}{x+5}$$

$$3. f(x) = \frac{x^2-1}{9-x^2}$$

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

$$5. f(x) = \frac{6-x}{x^2-7x+10}$$

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

$$7. f(x) = \frac{x-1}{x^2+3x}$$

$$8. f(x) = \frac{x^2-8x}{x+1}$$

Funzioni logaritmiche: Studiare le seguenti funzioni fino alla derivata seconda, tracciarne il grafico ed indicare gli eventuali punti di minimo, massimo e punti di flesso.

$$9. f(x) = x^3 \cdot (\ln x - 1)$$

$$10. f(x) = \ln(x^2 + 1)$$

$$11. f(x) = \frac{\ln(x^2)}{x}$$

$$12. f(x) = x \cdot \ln^2 x$$

$$13. f(x) = \frac{\ln x + 1}{x}$$

$$14. f(x) = \ln\left(\frac{2x+5}{x-4}\right)$$

$$15. f(x) = \ln\left(\frac{3x-12}{x-6}\right)$$

$$16. f(x) = \ln\left(\frac{x-4}{2x+6}\right)$$

Funzioni irrazionali: Studiare le seguenti funzioni fino alla derivata prima, tracciarne il grafico ed indicare gli eventuali punti di minimo, massimo.

$$17. f(x) = 1 - \sqrt{\frac{x}{x+1}}$$

$$18. f(x) = \sqrt{\frac{3x-6}{x+5}}$$

$$19. f(x) = \sqrt{\frac{2x+8}{x+6}}$$

$$20. f(x) = \sqrt{\frac{x+1}{2x-8}}$$

Funzioni esponenziali: Studiare le seguenti funzioni fino alla derivata prima, tracciarne il grafico ed indicare gli eventuali punti di minimo, massimo.

$$21. f(x) = x^2 \cdot e^{-\frac{1}{x}}$$

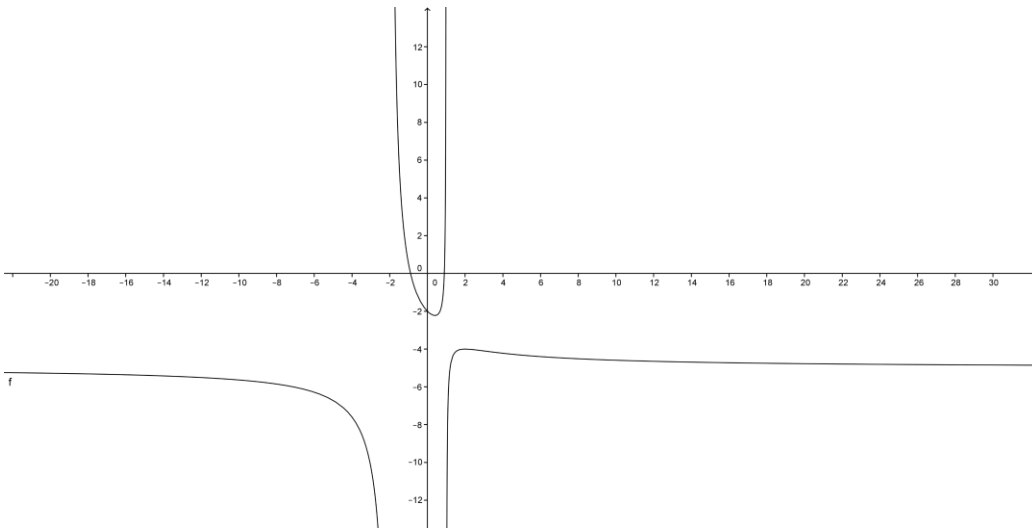
$$22. f(x) = e^{\frac{1-x}{x^2}}$$

$$23. f(x) = e^{\frac{x+1}{2x-2}}$$

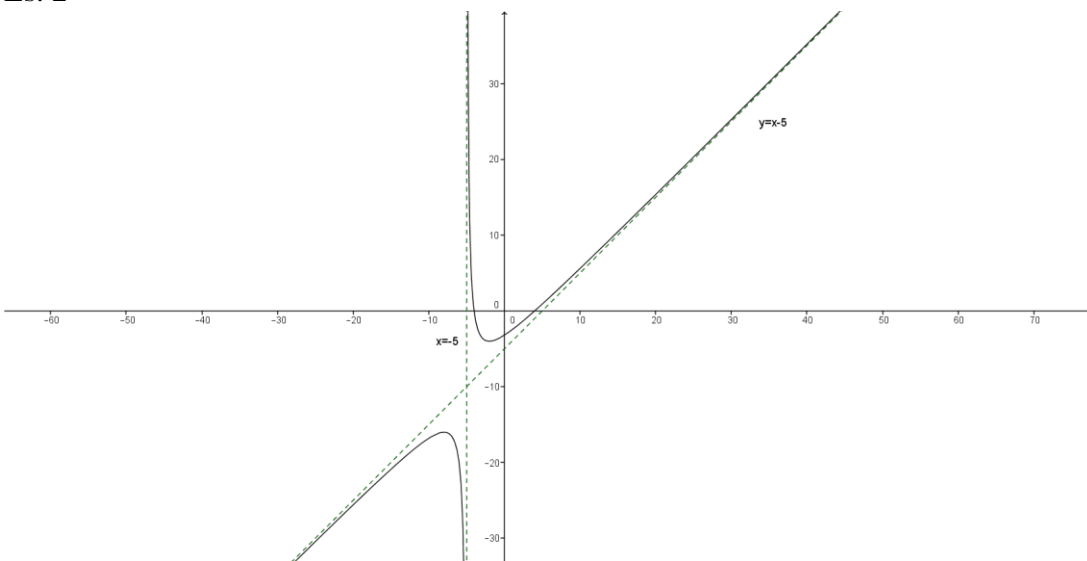
$$24. f(x) = x^3 \cdot e^{-x^3}$$

### Soluzioni

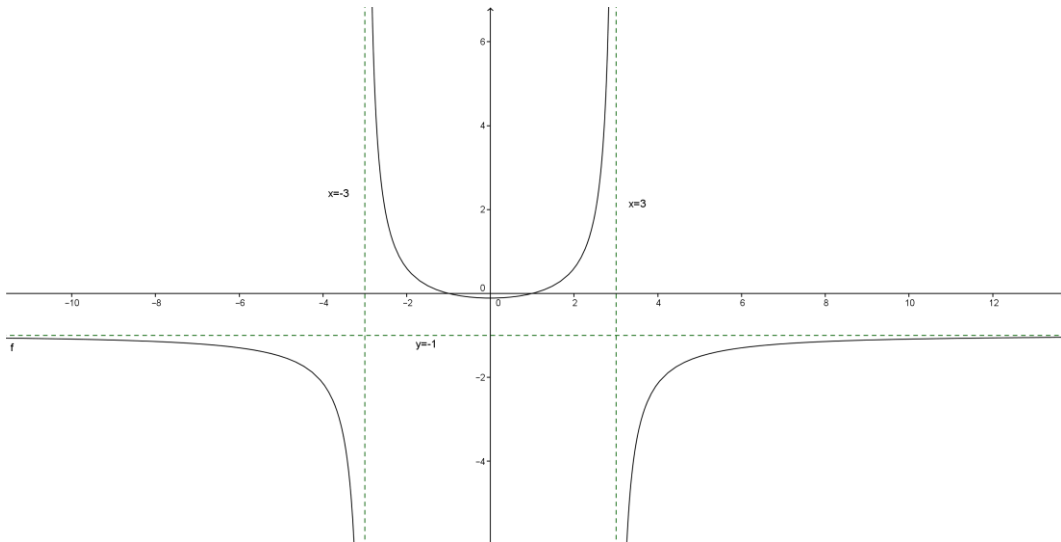
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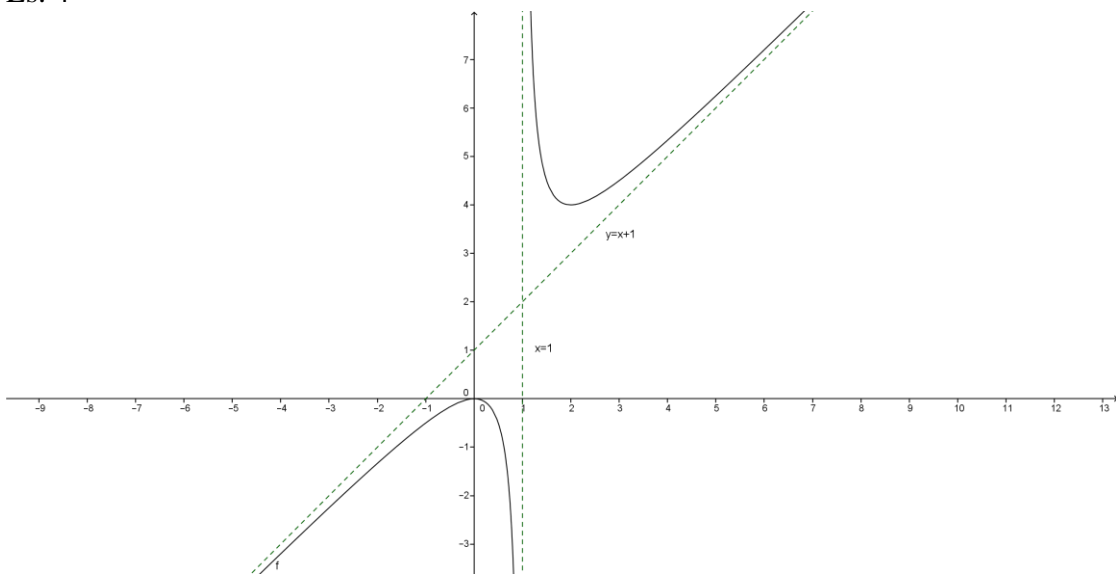
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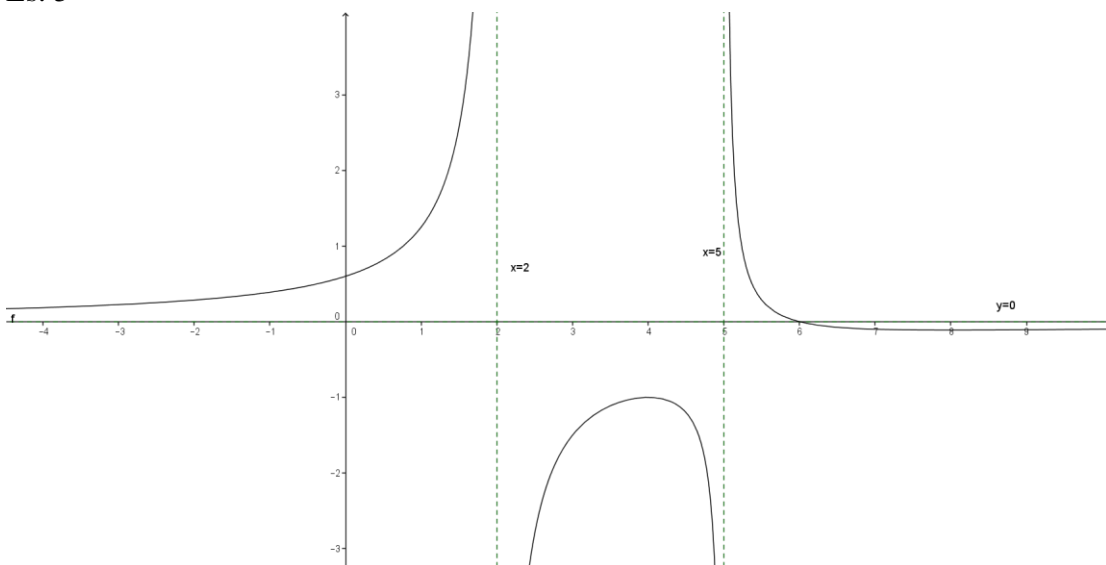
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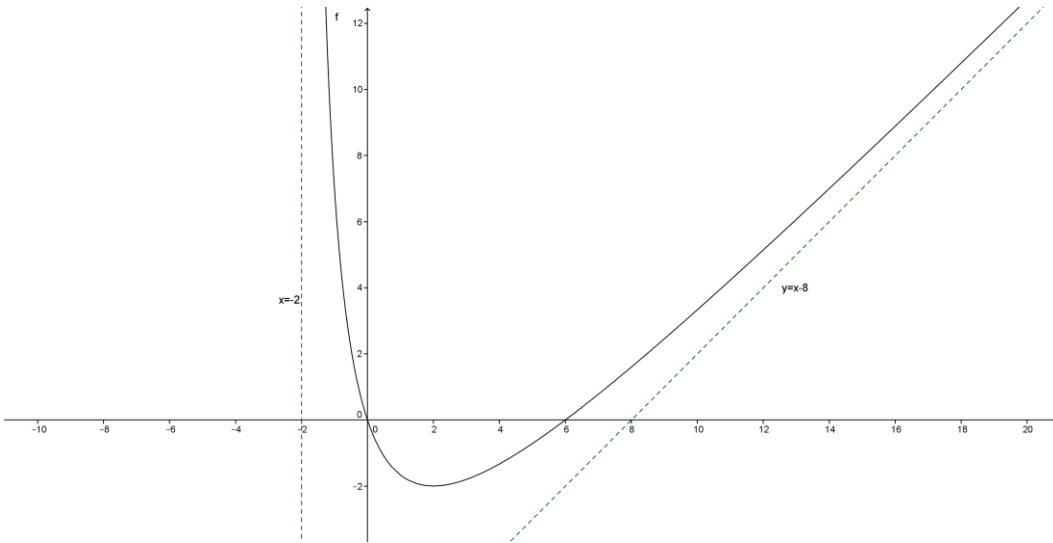
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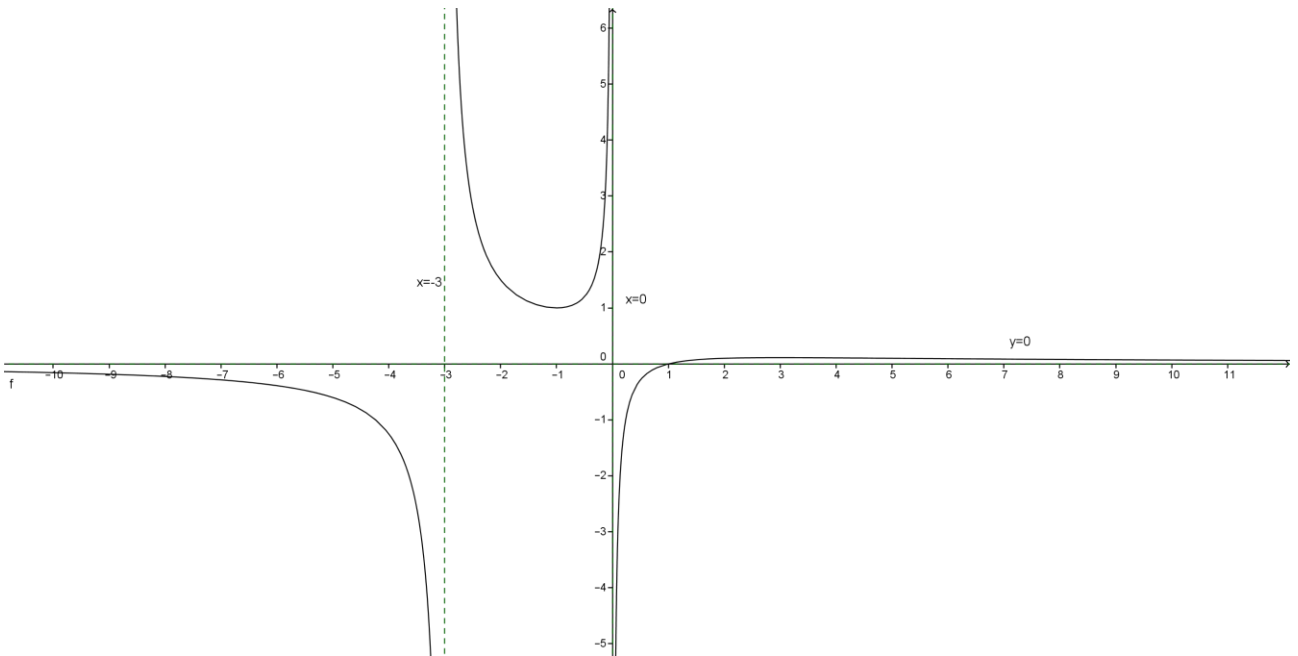
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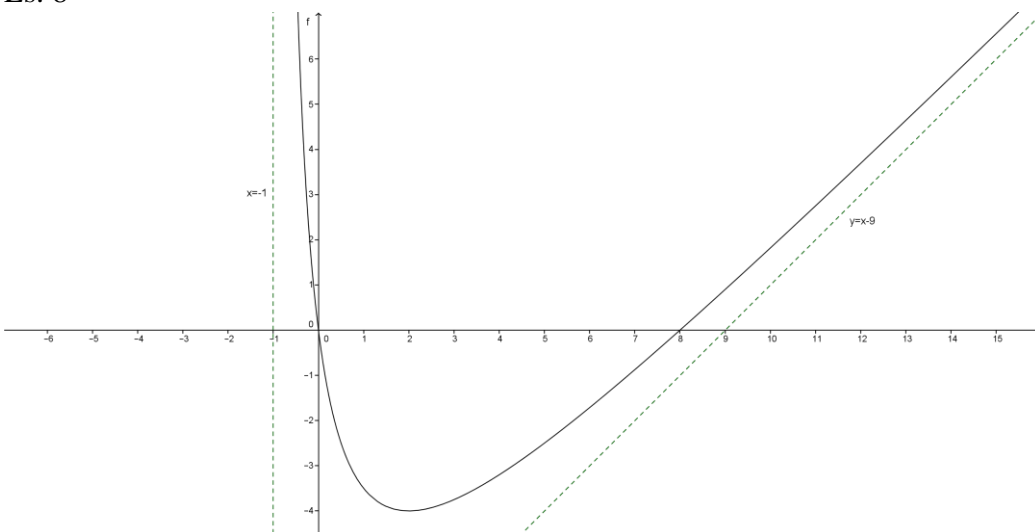
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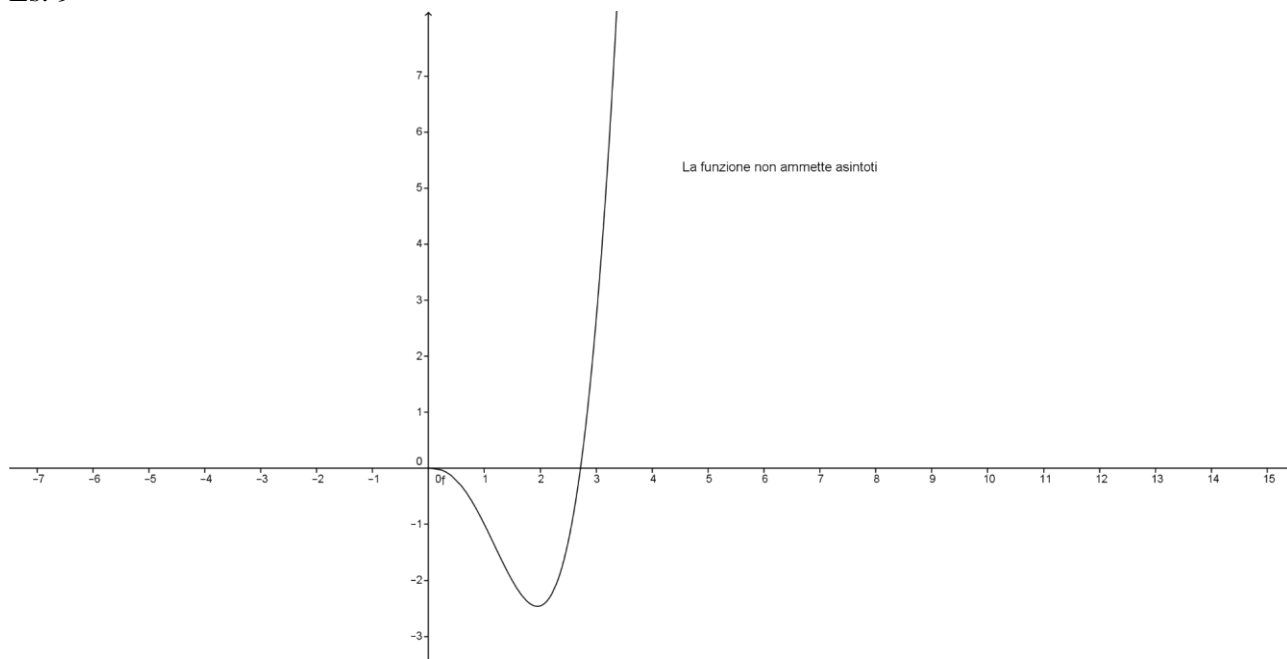
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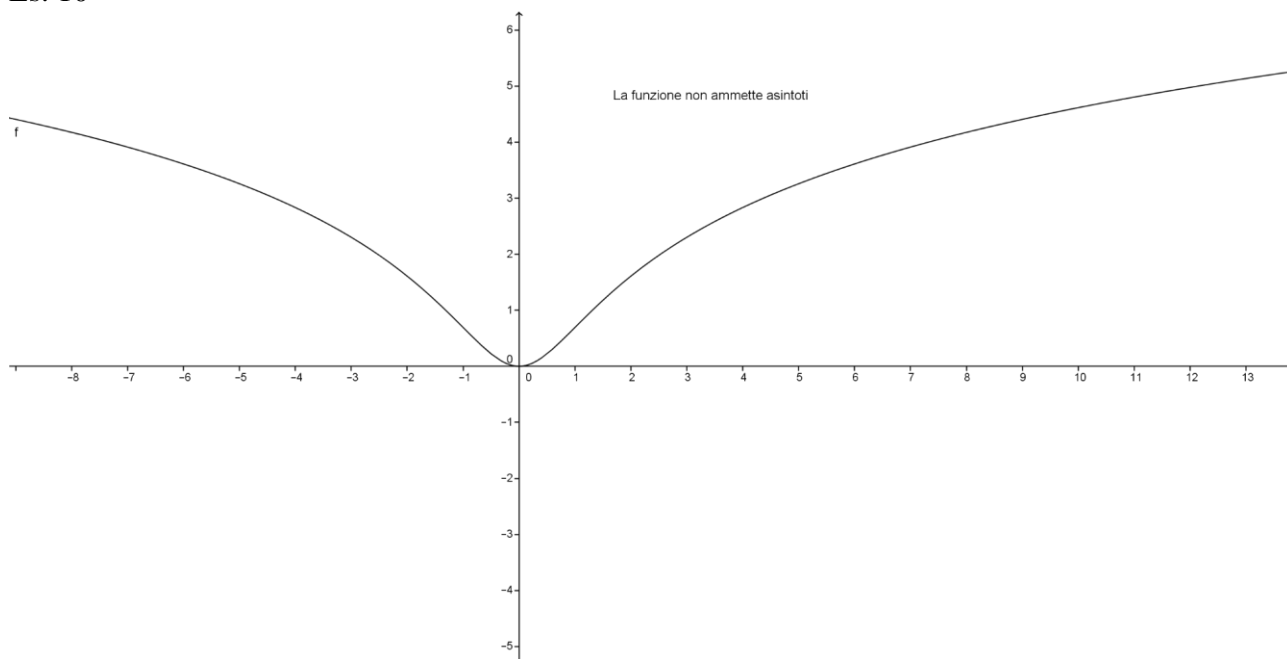
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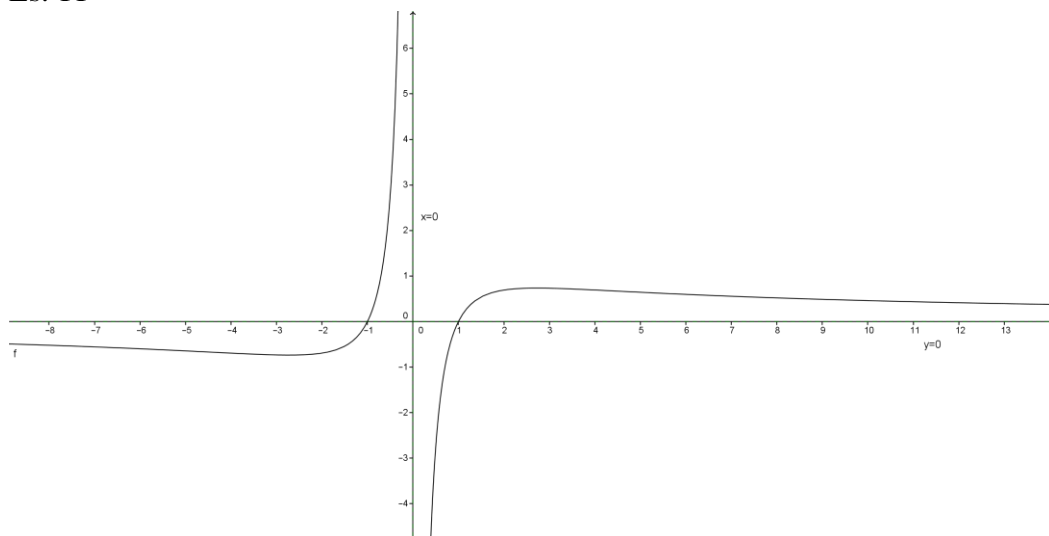
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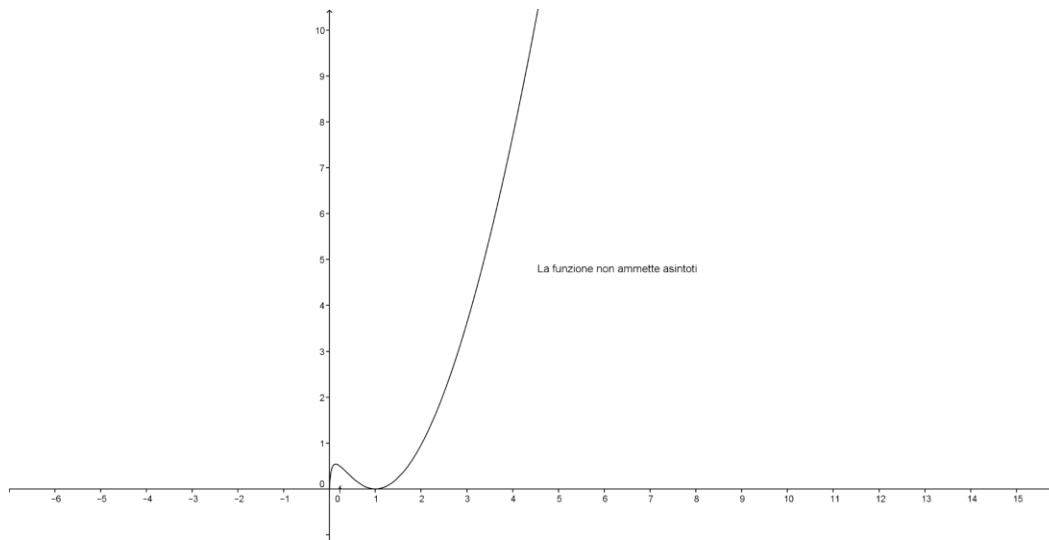
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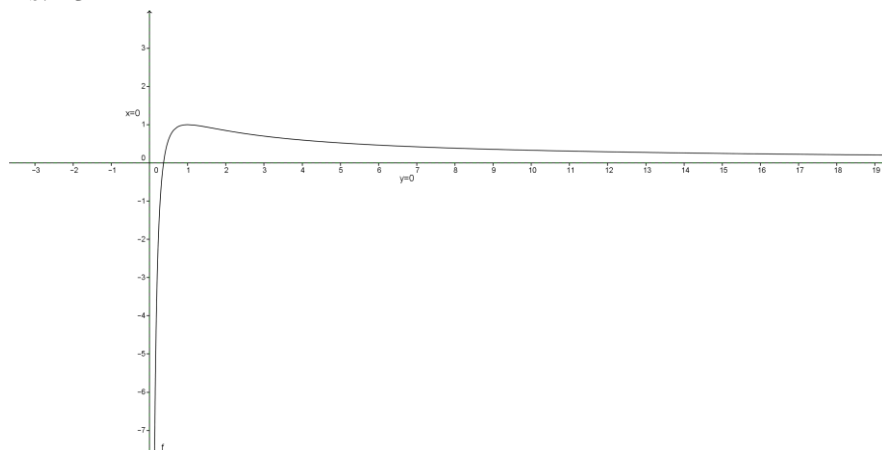
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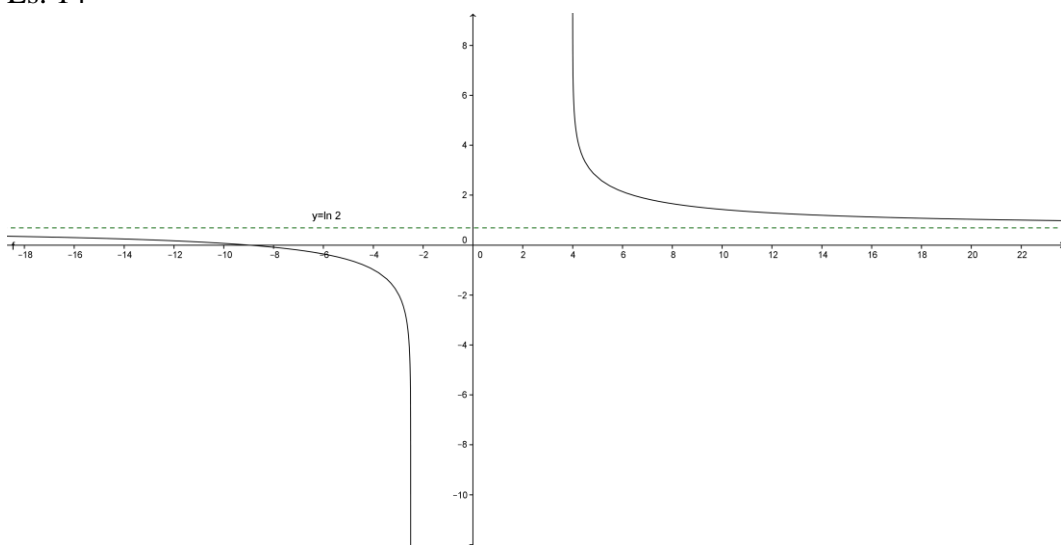
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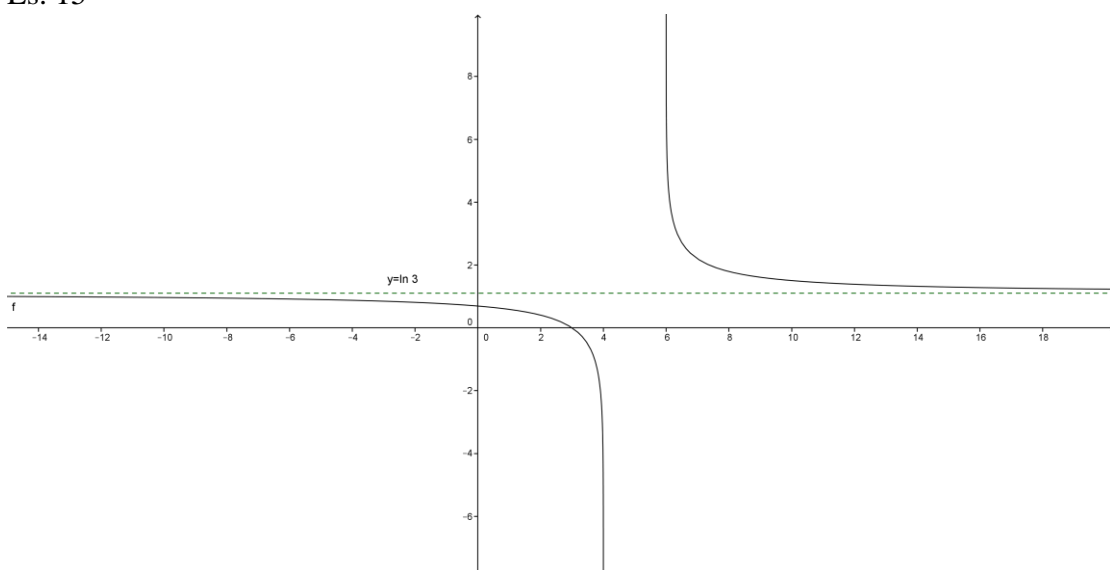
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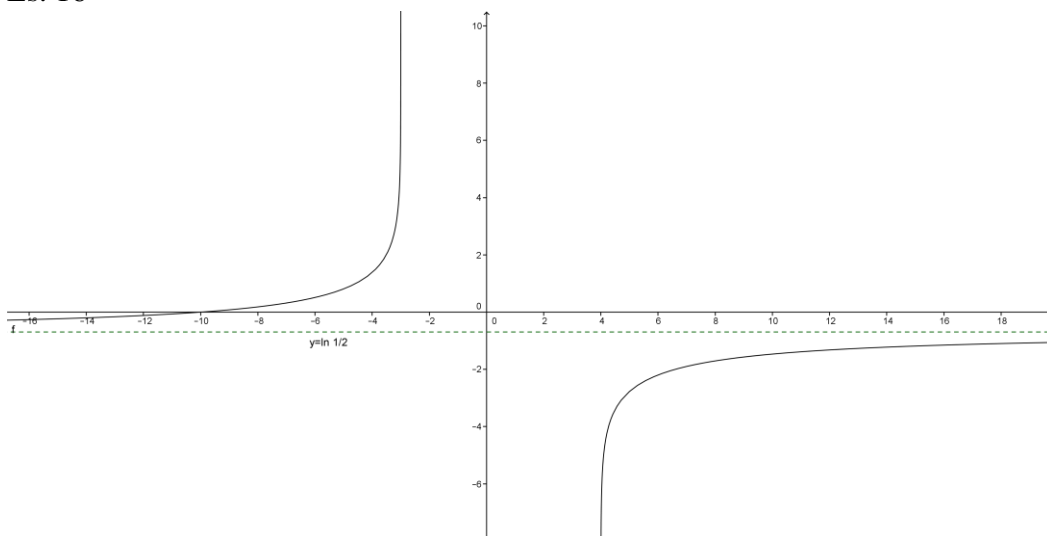
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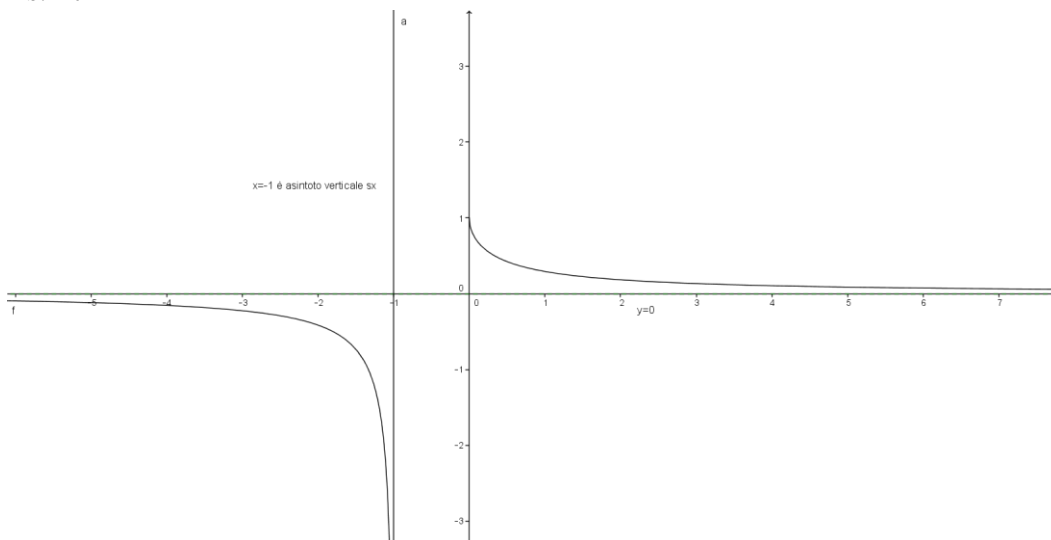
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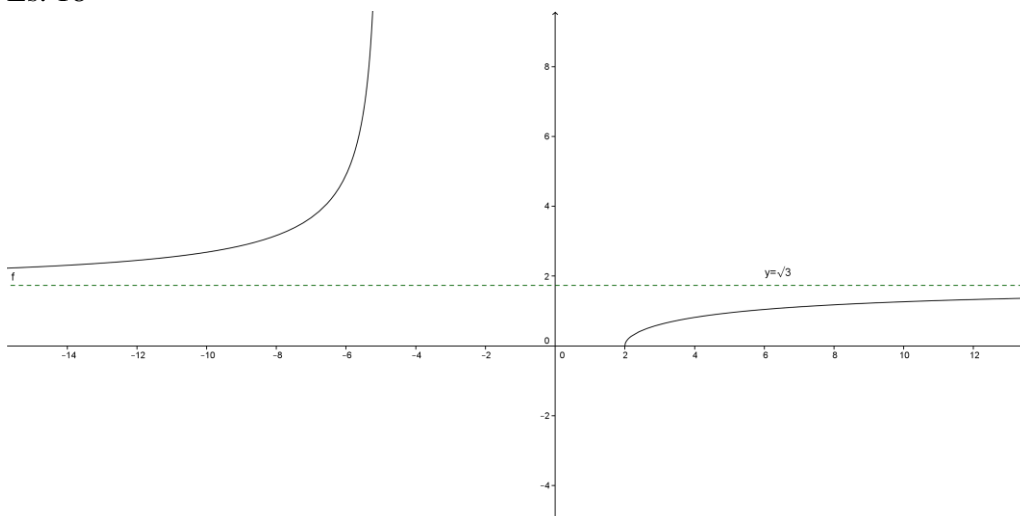
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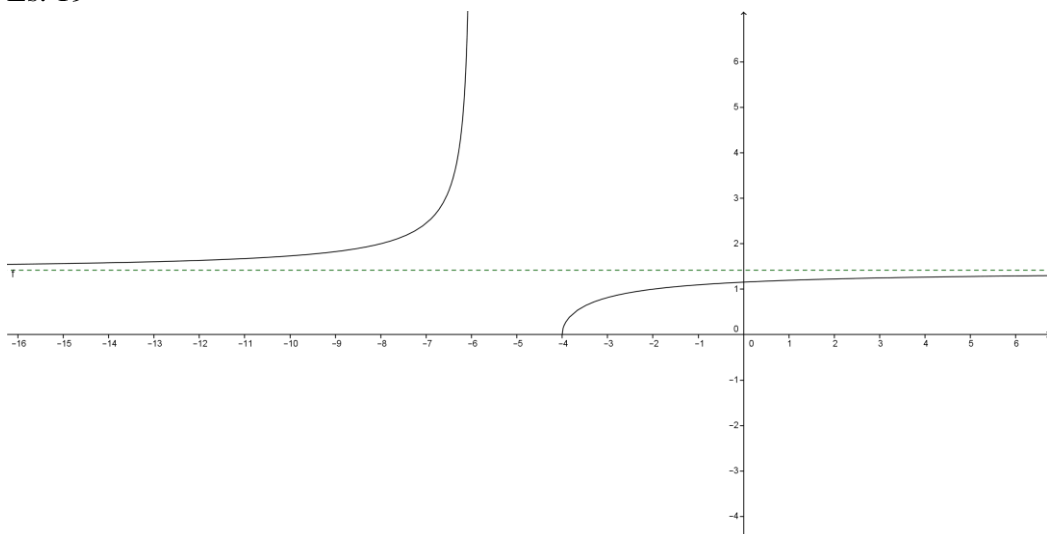


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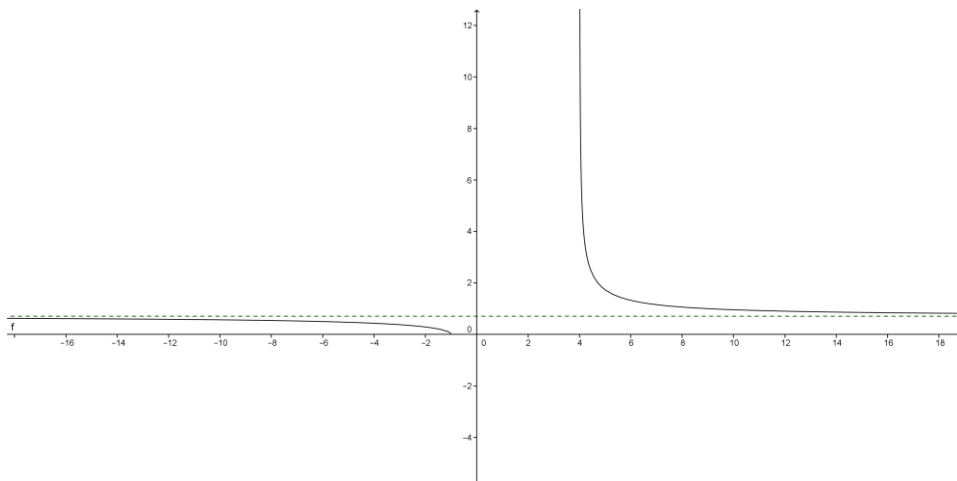




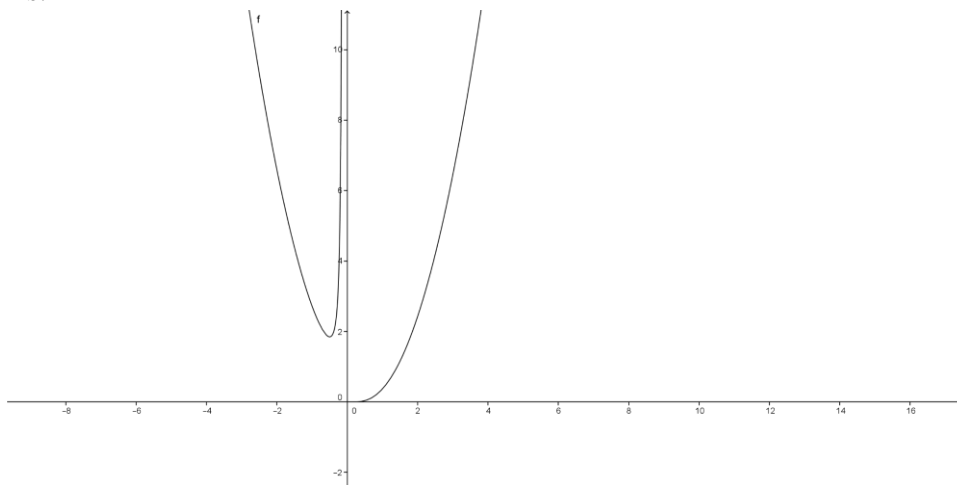
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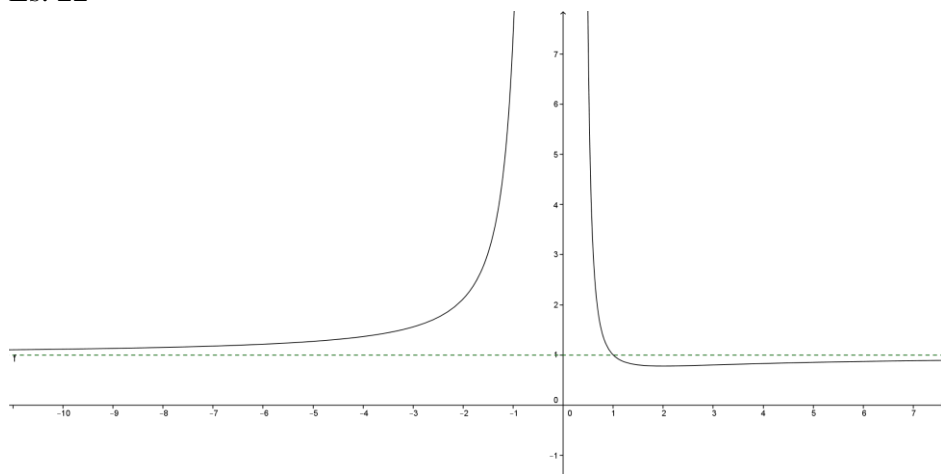
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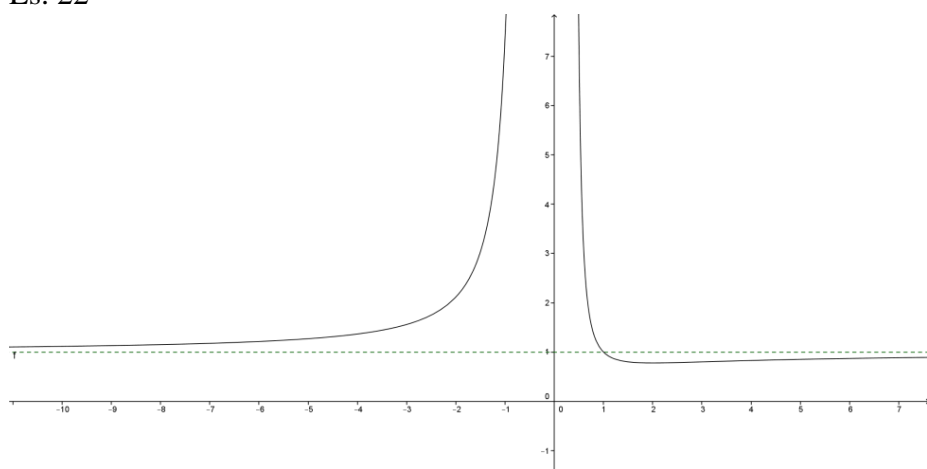
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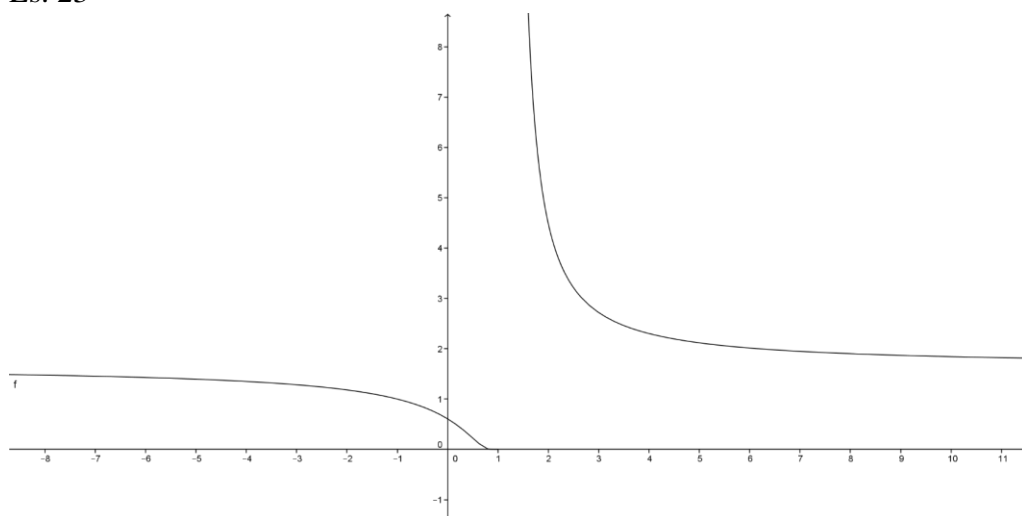
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Es. 22



Es. 23



Es. 24

