TBM 7A, 5. 12. 2014

1. $f(x) = \frac{1}{4}x - 2$; $D = \mathbb{R}$, $H = \mathbb{R}$ $\quad f^{-1}(x) = 4x + 8$ $\quad D = \mathbb{R}$, $H = \mathbb{R}$

$y = \frac{1}{4}x - 2 \quad / +2$

$y + 2 = \frac{1}{4}x \quad / \cdot 4$

$4(y+2) = x$

$4y + 8 = x \quad / x \curvearrowright y$

$y = 4x + 8$

2. $g(x) = \frac{3}{x-7} - 4$ $\quad D = \mathbb{R} \setminus \{7\}$, $H = \mathbb{R} \setminus \{-4\}$ $\quad g^{-1}(x) = 3 \cdot \frac{1}{x+4} + 7$

$D = \mathbb{R} \setminus \{-4\}$, $H = \mathbb{R} \setminus \{7\}$

$y = \frac{3}{x-7} - 4 \quad / +4$

$y + 4 = \frac{3}{x-7} \quad / \; 1/x$

$\frac{1}{y+4} = \frac{x-7}{3} \quad / \cdot 3$

$3 \cdot \frac{1}{y+4} = x - 7 \quad / +7$

$3 \cdot \frac{1}{y+4} + 7 = x \quad / x \curvearrowright y$

$y = 3 \cdot \frac{1}{x+4} + 7$

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

$D = [-5, \infty]$ $\quad$ $D = [-5, \infty]$

$H = [-5, \infty]$ $\quad$ $H = [-5, \infty]$

$y = 2\sqrt{x+5}-5 \;/+5$

$y+5 = 2\sqrt{x+5} \;/:2$

$\frac{1}{2}(y+5) = \sqrt{x+5} \;/^2$

$\left(\frac{1}{2}\right)^2 (y+5)^2 = x+5 \;/-5$

$\frac{1}{4}(y+5)^2 - 5 = x \;/ x \curvearrowright y$

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

6. $f^{-1}(x) = \frac{1}{2} \cdot 2^{x+4} - 2$ $\quad D = \mathbb{R}, H =]-2, \infty]$

$= 2^{-1} \cdot 2^{x+4} - 2 = 2^{x+4-1} - 2$

$= 2^{x+3} - 2$

$H = \{x \in \mathbb{R} / x > -2\}$

$y = 2^{x+3} - 2 \;/+2$

$y+2 = 2^{x+3} \;/\log_2$

$\log_2(y+2) = (x+3) \cdot \underbrace{\log_2 2}_{=1} \;/$

$\log_2(y+2) = x+3 \;/-3$

$\log_2(y+2) - 3 = x \;/ x \curvearrowright y$

$f(x) = y = \log_2(x+2) - 3$

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

$D = [-5, \infty]$ $\quad$ $D = [-5, \infty]$

$H = [-5, \infty]$ $\quad$ $H = [-5, \infty]$

$y = 2\sqrt{x+5}-5 \;/+5$

$y+5 = 2\sqrt{x+5} \;/:2$

$\frac{1}{2}(y+5) = \sqrt{x+5} \;/^2$

$\left(\frac{1}{2}\right)^2 (y+5)^2 = x+5 \;/-5$

$\frac{1}{4}(y+5)^2 - 5 = x \;/ x \curvearrowright y$

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

6. $f^{-1}(x) = \frac{1}{2} \cdot 2^{x+4} - 2$ $\quad D = \mathbb{R}, H =]-2, \infty]$

$= 2^{-1} \cdot 2^{x+4} - 2 = 2^{x+4-1} - 2$

$= 2^{x+3} - 2$

$H = \{x \in \mathbb{R} / x > -2\}$

$y = 2^{x+3} - 2 \;/+2$

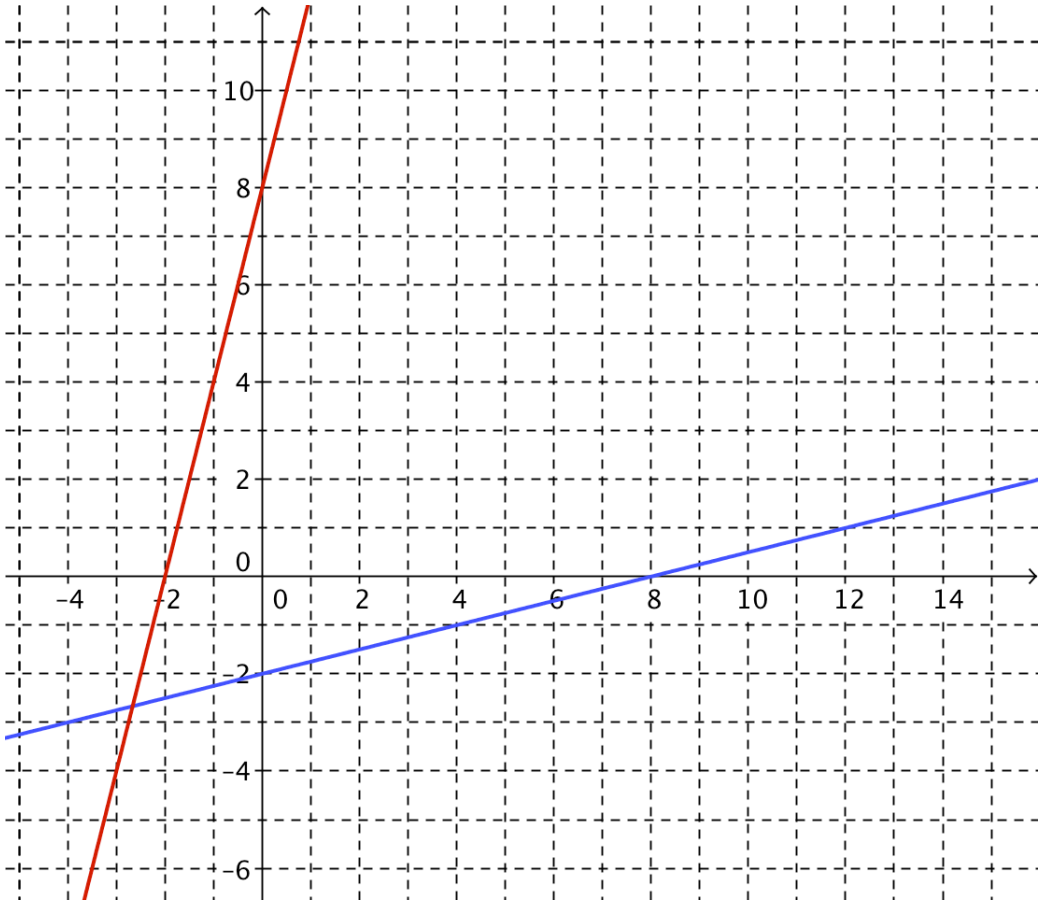
$y+2 = 2^{x+3} \;/\log_2$

$\log_2(y+2) = (x+3) \cdot \underbrace{\log_2 2}_{=1} \;/$

$\log_2(y+2) = x+3 \;/-3$

$\log_2(y+2) - 3 = x \;/ x \curvearrowright y$

$f(x) = y = \log_2(x+2) - 3$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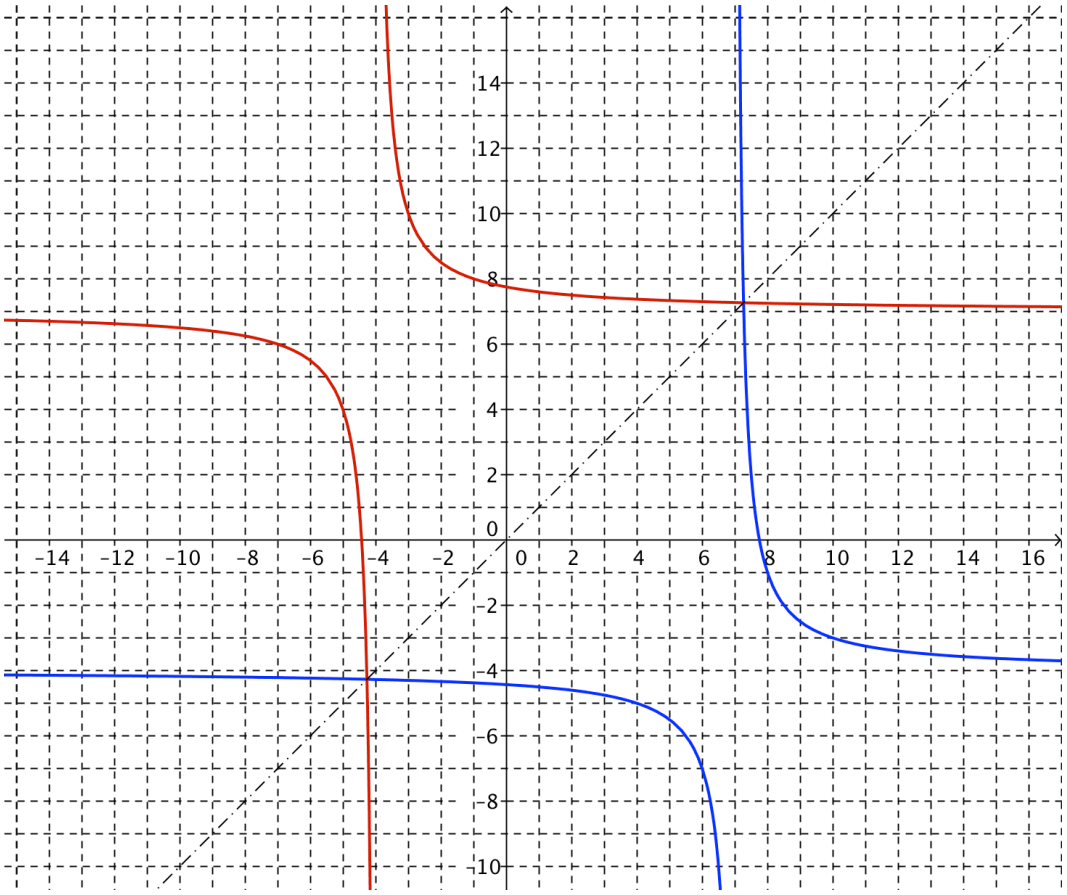
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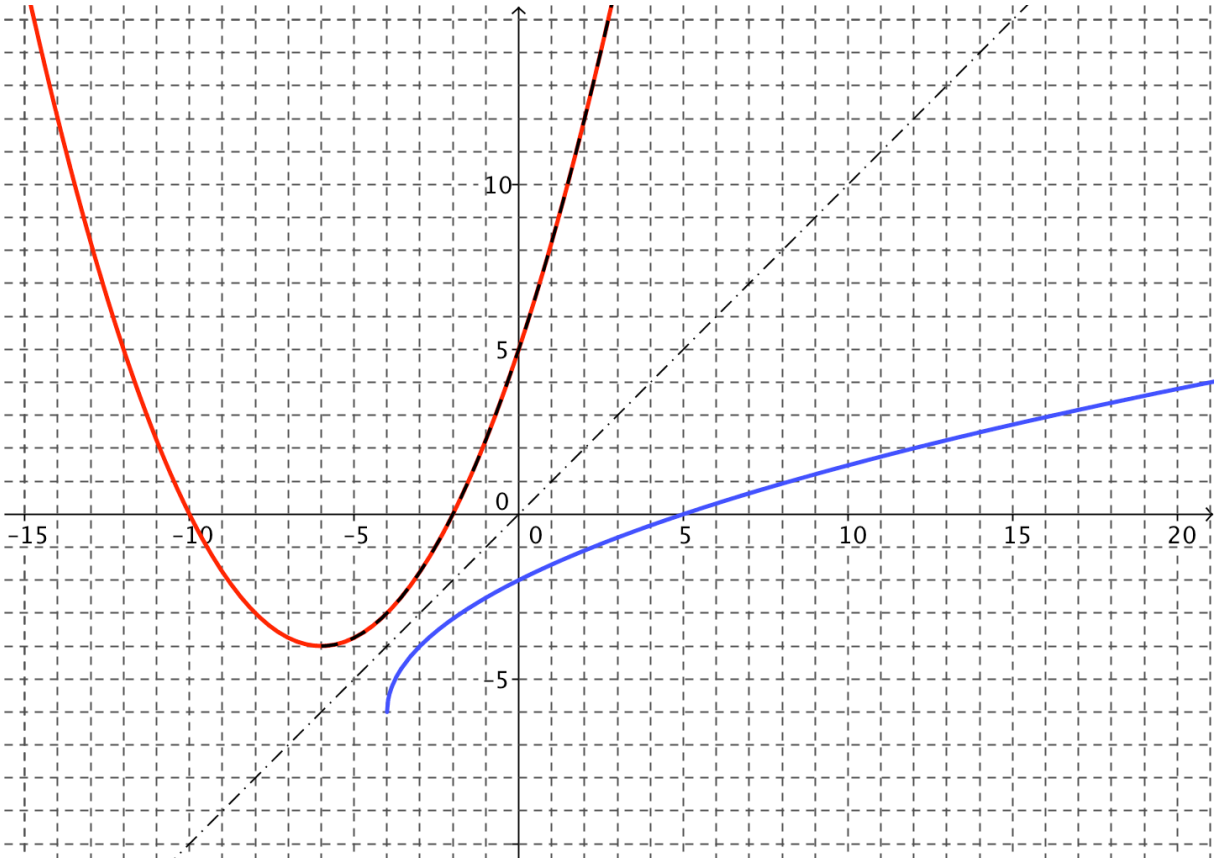
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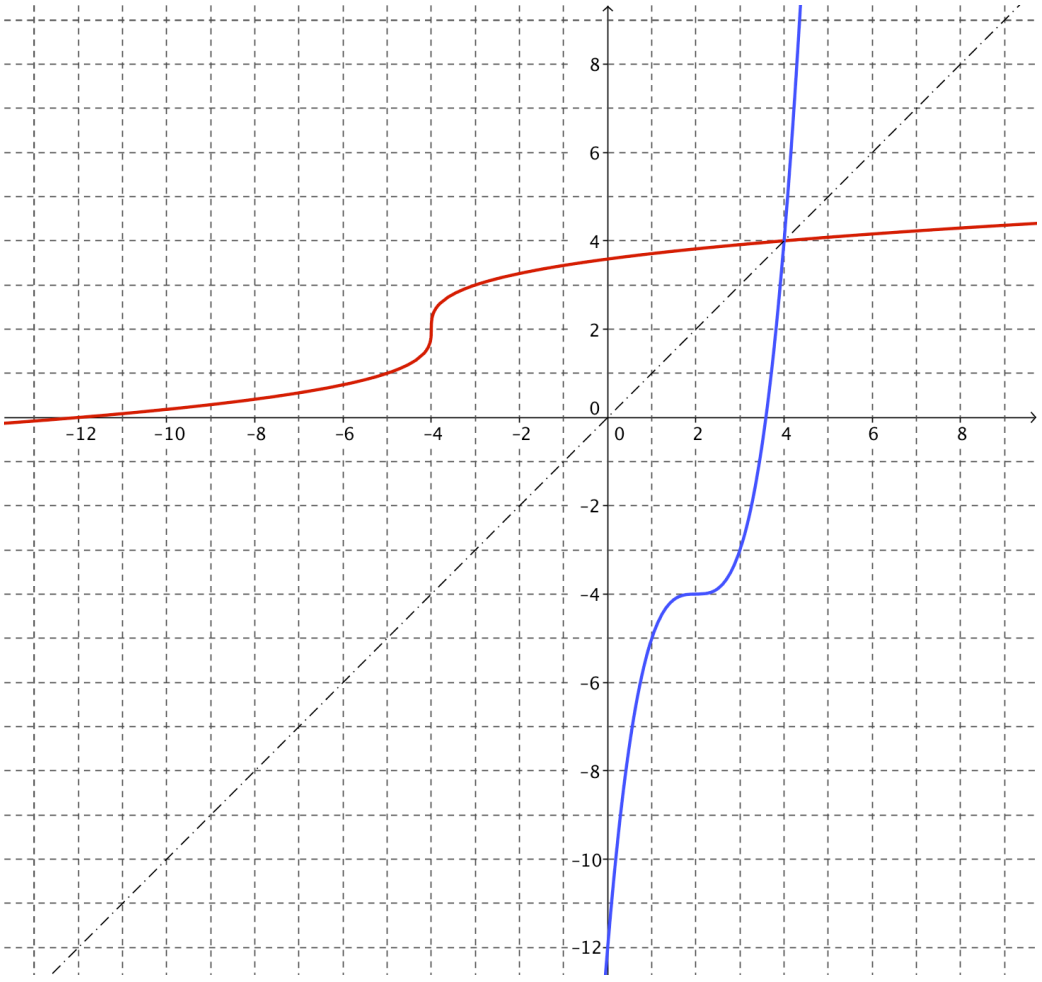
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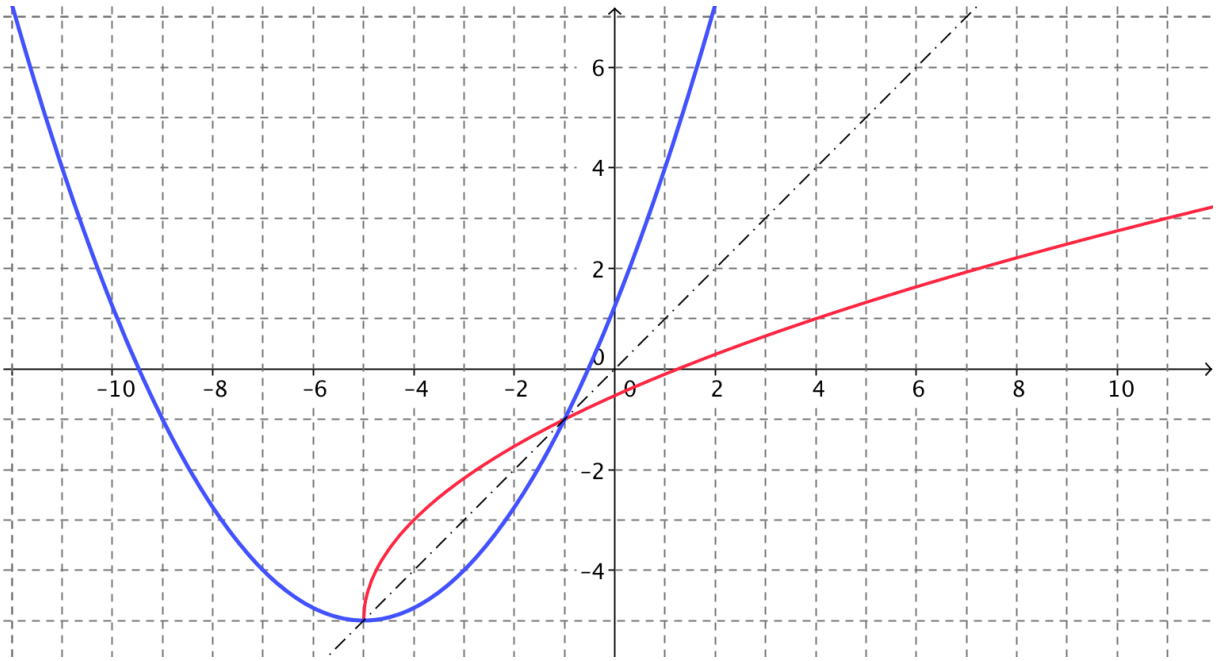
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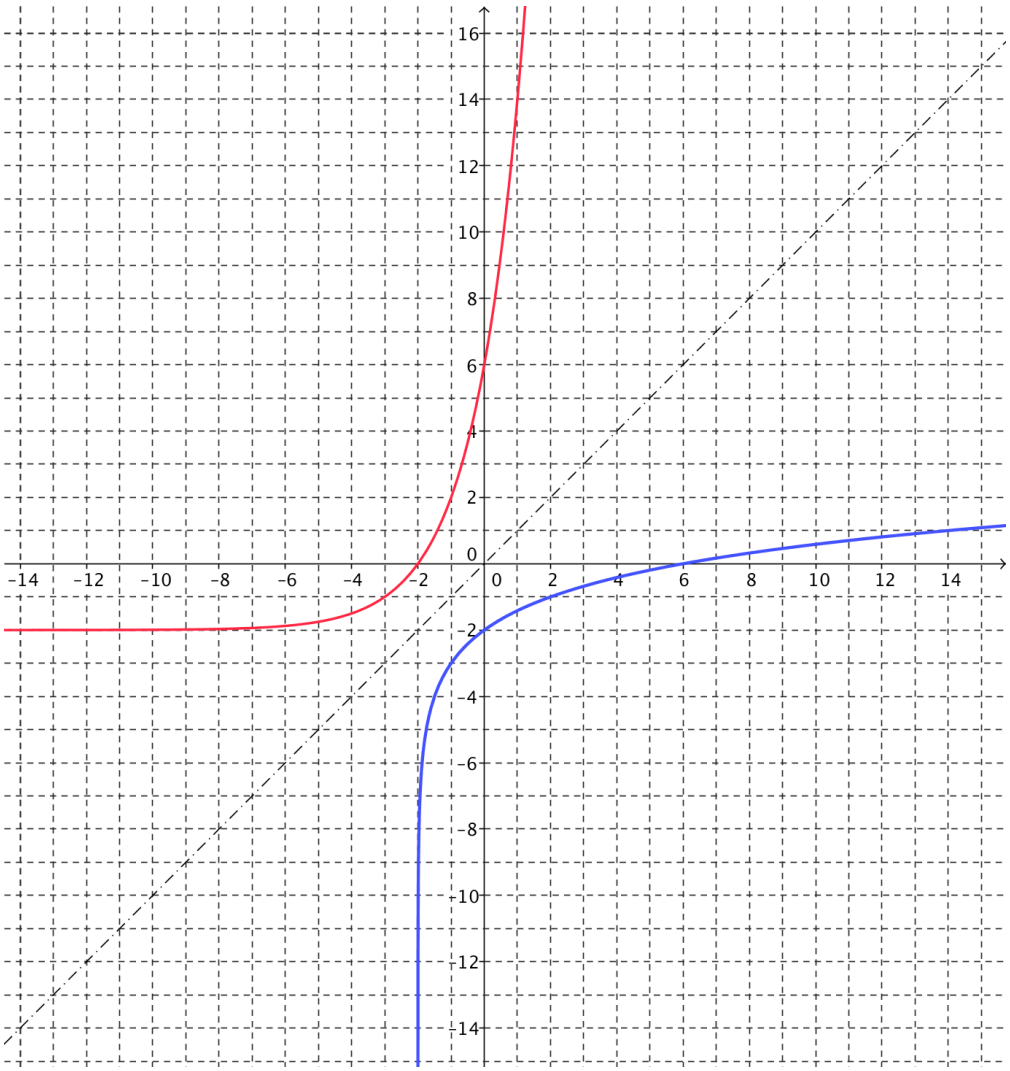
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