Fläche zwischen f(x) und Asymptote

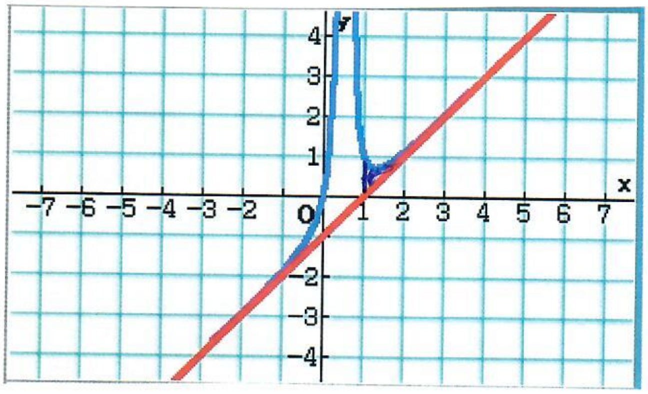
1) $f(x) = \dfrac{4x^3 - 8x^2 + 5x}{(1-2x)^2}$ $\quad]\,[1 \,|\, +\infty[$

CP: $\text{propFrac}((4x^3-8x^2+5x)/(1-2x)^2)$

$= x - 1 + \dfrac{1}{(1-2x)^2} \quad \curvearrowright \quad \underline{\underline{y = x-1}}$

$$A = \int_1^{+\infty} \left(x - 1 + \frac{1}{(1-2x)^2}\right) - (x-1)\, dx$$

$$A = \int_1^{+\infty} \frac{1}{(1-2x)^2}\, dx \rightarrow ① \int_1^{c} (1-2x)^{-2} dx = \left[\frac{1}{-2} \cdot \left(-\frac{1}{1-2x}\right)\right]_1^c$$



$$= \left[\frac{1}{2} \cdot \frac{1}{1-2x}\right]_1^c$$

$$= \frac{1}{2} \cdot \frac{1}{1-2c} - \frac{1}{2} \cdot \frac{1}{-1}$$

$$= \frac{1}{2} \cdot \frac{1}{1-2c} + \frac{1}{2}$$

② $\lim\limits_{c \to \infty} \dfrac{1}{2} \cdot \dfrac{1}{1-2c} + \dfrac{1}{2} = \underline{\underline{\dfrac{1}{2}\text{ FE}}}$

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2) $f(x) = \dfrac{-x^3 + 2x^2 - x + 6}{2(1-x)^2}$ $\quad]\,]-\infty \,|\, 0]$

CP: $\text{propFrac}((-x^3+2x^2-x+6)/(2(1-x)^2))$

$= -\frac{1}{2}x + \dfrac{3}{(x-1)^2} \quad \curvearrowright \quad \underline{\underline{y = -\frac{1}{2}x}}$

CP: $A = \displaystyle\int_{-\infty}^{0} \left(-\frac{1}{2}x + \frac{3}{(x-1)^2}\right) - \left(-\frac{1}{2}x\right) dx \;\; \underline{\underline{= 3\text{ FE}}}$