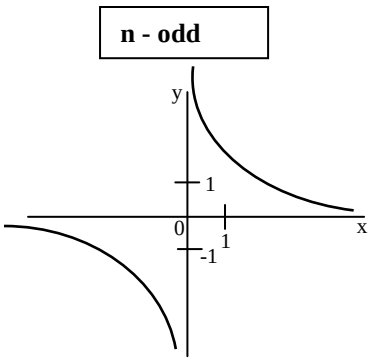
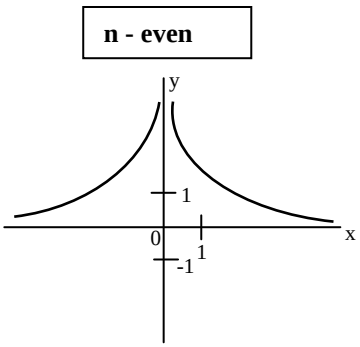
Worksheet 9 – POWER FUNCTION WITH NEGATIVE NATURAL EXPONENT $y = x^{-n}; n \in N$





Domain = R- {0}

- Range = R- {0}
- Decreasing on the intervals $(-\infty,0),(0,\infty)$
- Not bounded above neither below
- Odd

- Range = R^+
  Decreasing on the interval $(0,\infty)$
  Increasing on the interval $(-\infty,0)$
- Not bounded above,
  Bounded below
- Even

No maximum, no minimum

Examples: Draw graphs of functions a) $y = x^{-4} - 1$, b) $y = \frac{1}{(1+x)^2}$, c) $y = \frac{1}{(x-1)^3}$

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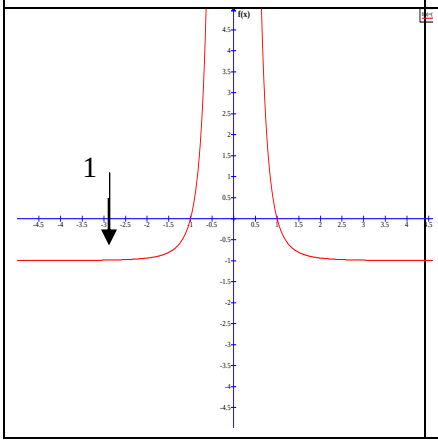	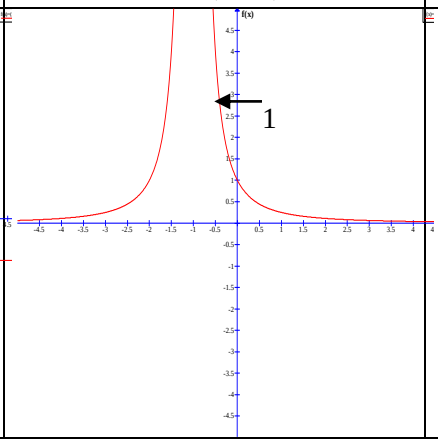	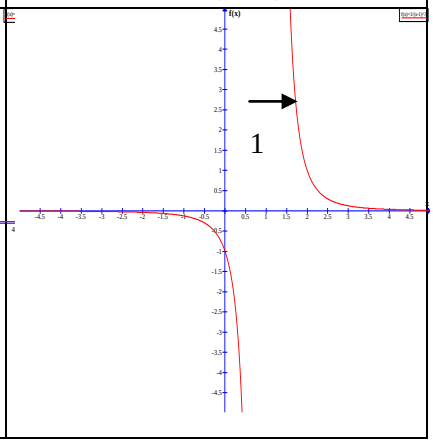

Exercise: Draw graphs of these functions and write properties:

a) $y = -\frac{1}{x}$, b) $y = -\frac{1}{x} - 1$, c) $y = -\frac{1}{x+2}$. d) $y = -\frac{1}{x+2} - 1$, e) $y = \frac{1}{2x}$, f) $y = \frac{1}{2x} + 2$, g) $y = \frac{1}{2x-1}$, h) $y = \frac{1}{2x+1} + 2$