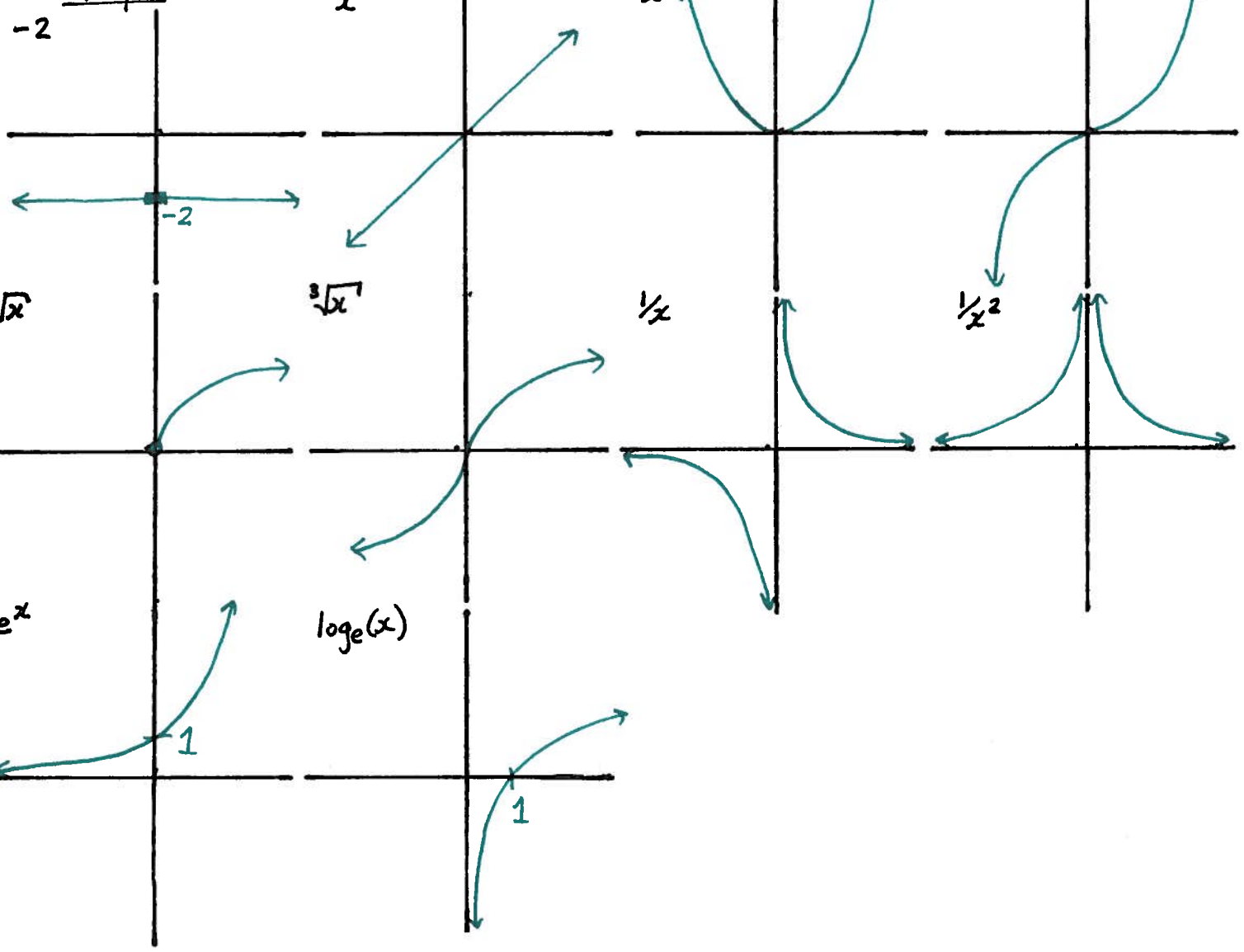
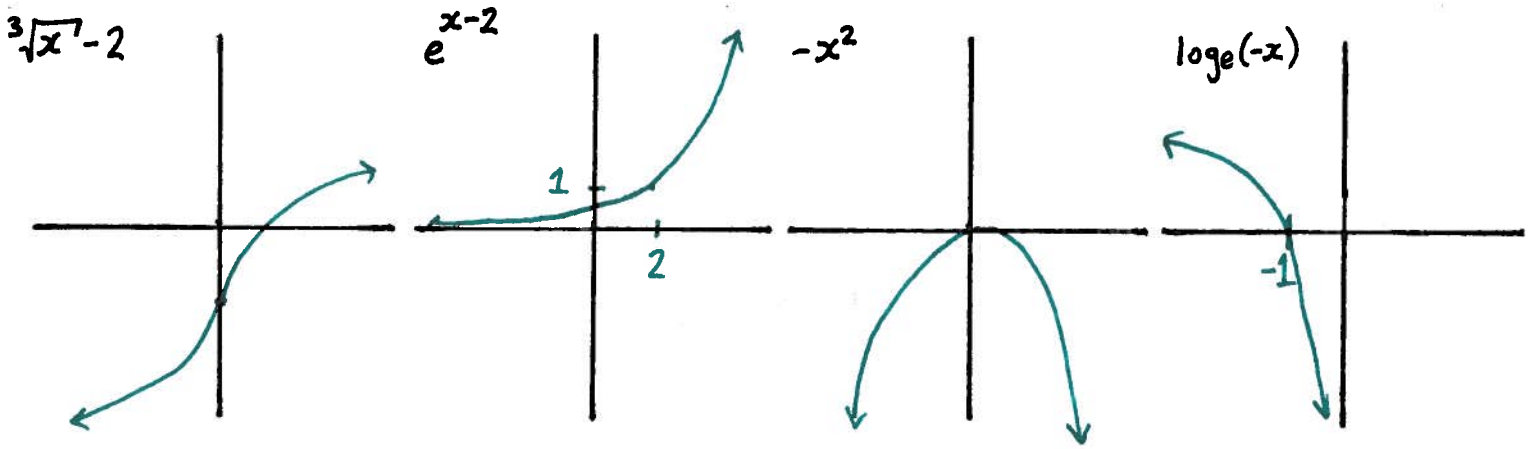
$f(x)$	x^2	$\sqrt[3]{x}$	e^x	$\log_e(x)$	change in the graph
$f(x)+2$	x^2+2	$\sqrt[3]{x}+2$	e^x+2	$\log_e(x)+2$	shift up 2
$f(x)-2$	x^2-2	$\sqrt[3]{x}-2$	e^x-2	$\log_e(x)-2$	shift down 2
$2f(x)$	$2x^2$	$2\sqrt[3]{x}$	$2e^x$	$2\log_e(x)$	stretch vertically by 2
$\frac{1}{2}f(x)$	$\frac{1}{2}x^2$	$\frac{1}{2}\sqrt[3]{x}$	$\frac{1}{2}e^x$	$\frac{1}{2}\log_e(x)$	shrink vertically by 2
$-f(x)$	$-x^2$	$-\sqrt[3]{x}$	$-e^x$	$-\log_e(x)$	flip over x-axis
$f(x+2)$	$(x+2)^2$	$\sqrt[3]{x+2}$	e^{x+2}	$\log_e(x+2)$	shift left by 2
$f(x-2)$	$(x-2)^2$	$\sqrt[3]{x-2}$	e^{x-2}	$\log_e(x-2)$	shift right by 2
$f(2x)$	$(2x)^2$	$\sqrt[3]{2x}$	e^{2x}	$\log_e(2x)$	shrink horizontally by 2
$f(\frac{x}{2})$	$(\frac{x}{2})^2$	$\sqrt[3]{\frac{x}{2}}$	$e^{\frac{x}{2}}$	$\log_e(\frac{x}{2})$	stretch horizontally by 2
$f(-x)$	$(-x)^2$	$\sqrt[3]{-x}$	e^{-x}	$\log_e(-x)$	flip over y-axis

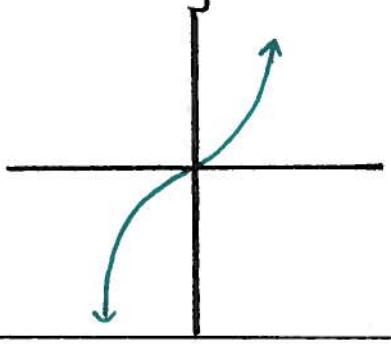
Graph:



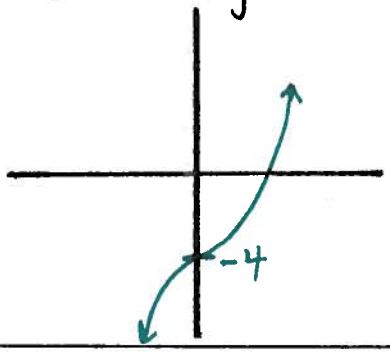


$(x+1)^3-4$

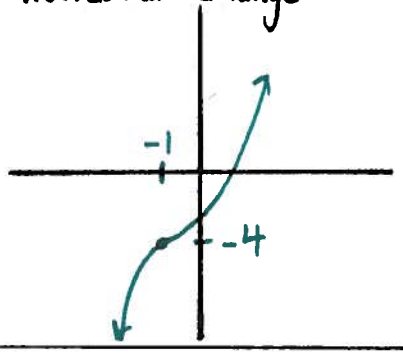
x^3 — starting function



down 4 — vertical change

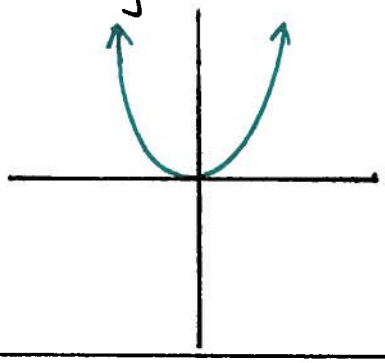


left 1 — horizontal change

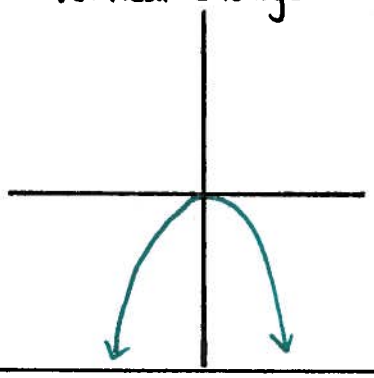


$-(x-1)^2$

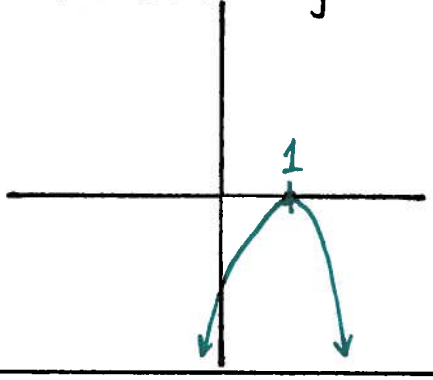
x^2 — starting function



flip over x-axis — vertical change

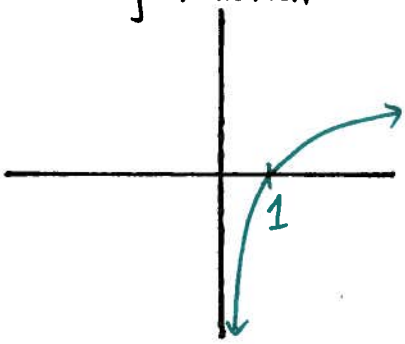


right 1 — horizontal change

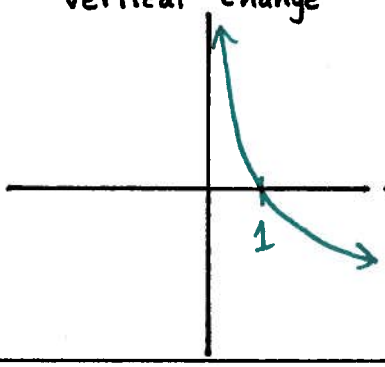


$-\log_e(x+2)$

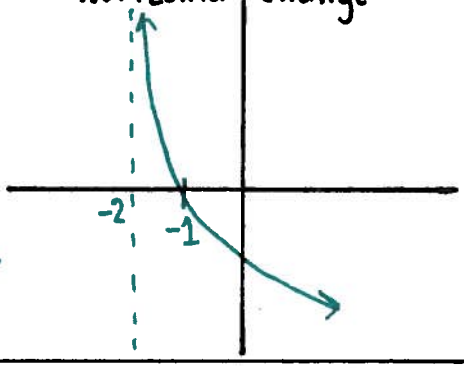
$\log_e(x)$ — starting function



flip over x-axis — vertical change

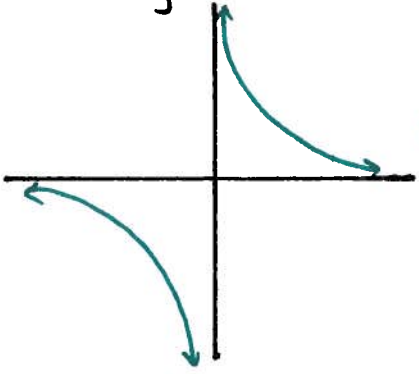


left 2 — horizontal change

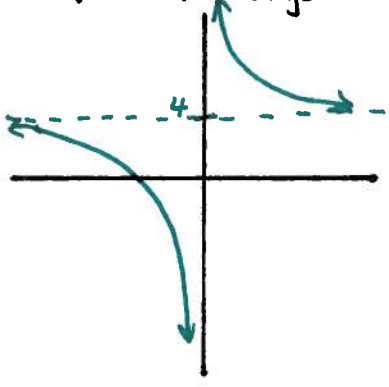


$\frac{1}{x-2}+4$

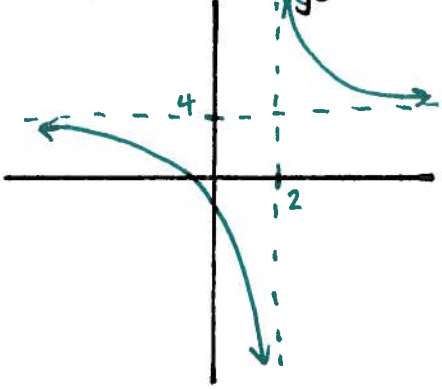
$1/x$ — starting function



up 4 — vertical change

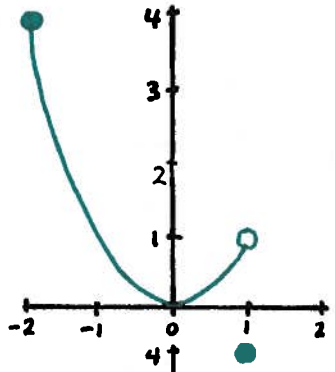


right 2 — horizontal change



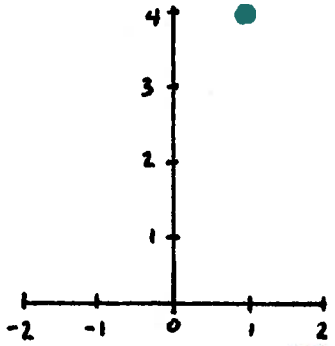
$f:[-2,1) \to \mathbb{R}$

$f(x) = x^2$



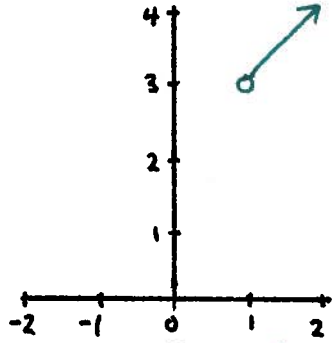
$f:\{1\} \to \mathbb{R}$

$f(x) = 4$



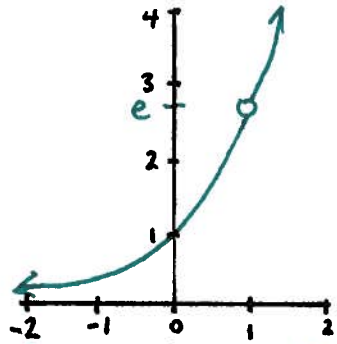
$f:(1,\infty) \to \mathbb{R}$

$f(x) = x+2$



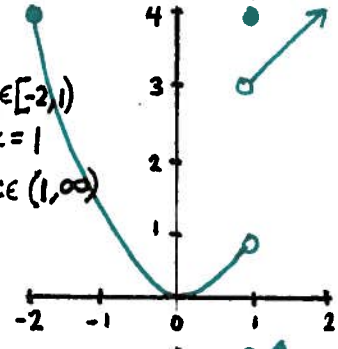
$f:\mathbb{R}-\{1\} \to \mathbb{R}$

$f(x) = e^x$



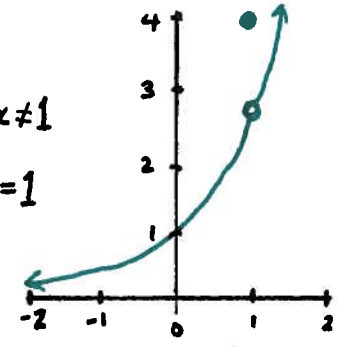
$f:[-2,\infty) \to \mathbb{R}$

$$f(x) = \begin{cases} x^2 & \text{if } x \in [-2,1) \\ 4 & \text{if } x = 1 \\ x+2 & \text{if } x \in (1,\infty) \end{cases}$$



$f:\mathbb{R} \to \mathbb{R}$

$$f(x) = \begin{cases} e^x & \text{if } x \neq 1 \\ 4 & \text{if } x = 1 \end{cases}$$



$$g(x) = \frac{3(x+2)(x^2+1)}{(x-2)(x-2)(x-2)}$$

vertical asymptotes: 2

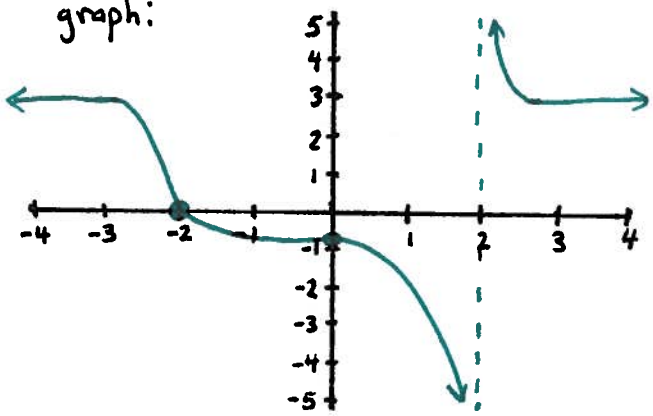
x-intercepts: -2

in between asy. and int.:

$$g(0) = \frac{3(0+2)(0^2+1)}{(0-2)(0-2)(0-2)} = \frac{(3)(2)(1)}{(-2)(-2)(-2)} < 0$$

quotient of leading terms: $\frac{3x^3}{x^3} = 3$

graph:



$$h(x) = -4(x+2)(x+1)(x+1)(x^2+1)$$

vertical asymptotes: none

x-intercepts: $-2, -1$

in between asy. and int.:

$$h(-3/2) = -4(1/2)(-1/2)(-1/2)((-3/2)^2+1) < 0$$

leading term: $-4x^5$

graph: