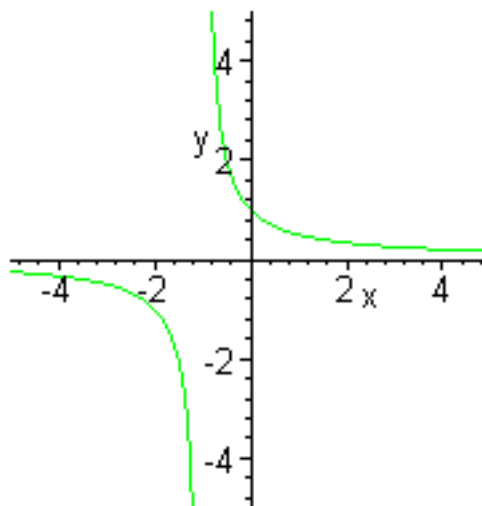
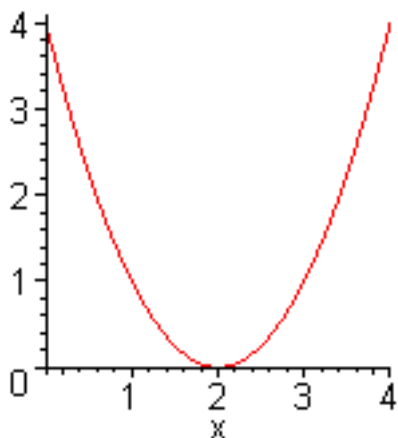
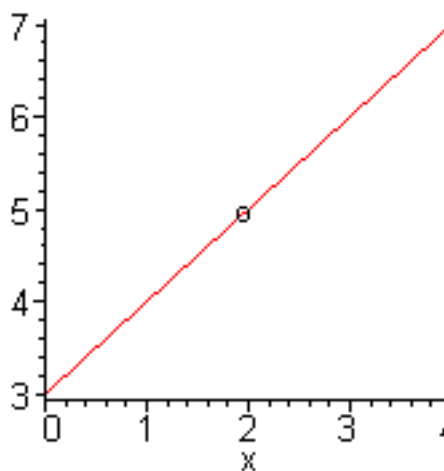
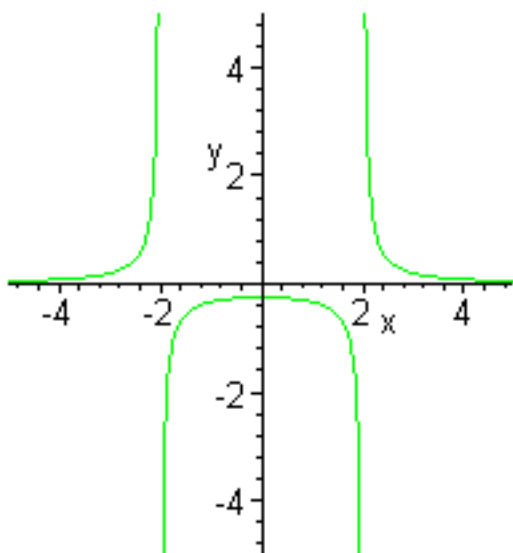


1. Domain: All x . $f(x)$ is continuous for all values of x with $f(2) = 0$. The graph is on the left below.



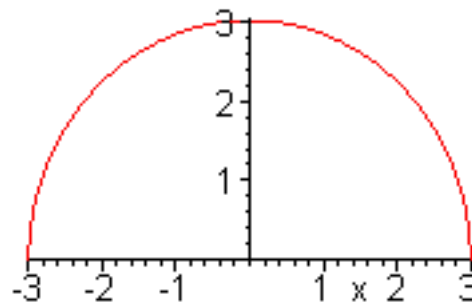
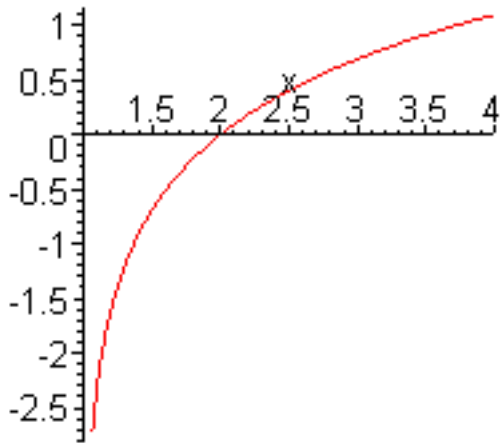
2. Domain: $x \neq -1$. $f(x)$ is continuous provided $x \neq -1$ with $f(2) = 1/3$. The graph is on the right above.

3. Domain: $x \neq \pm 2$. $f(x)$ is not continuous at $x = 2$. For this function the limit at $x = 2$ does not exist, as the function tends to infinity at $x = 2$. The graph is on the left below.



4. Domain: $x \neq 2$. $f(x)$ is not continuous at $x = 2$. However, the $\lim_{x \rightarrow 2} f(x) = 5$. The graph is on the right above.

5. Domain: $x > 1$. $f(x)$ is continuous for all $x > 1$ with $f(2) = 0$. The graph is on the left below.



6. Domain: $-3 \leq x \leq 3$. $f(x)$ is continuous on its domain with $f(2) = \sqrt{5}$. The graph is on the right above.

7. The function values are $f(0) = 0.5$ and $f(1) = 0$. The $\lim_{x \rightarrow 0} f(x) = 1$, while the limit does not exist at $x = 1$. The function is continuous for $-1 \leq x < 0$, $0 < x < 1$, and $1 < x \leq 2$.

8. The domain of this function is $x \neq 0$. The function values are $f(1) = 0$ and $f(2) = 4$, while the function value does not exist at $x = 0$. The $\lim_{x \rightarrow 0} f(x) = +\infty$ or does not exist. The limit does not exist at $x = 1$. The $\lim_{x \rightarrow 2} f(x) = 2$. The function is continuous for $-1 \leq x < 0$, $0 < x < 1$, $1 < x < 2$, and $2 < x \leq 3$.

9. The derivatives are given by

a. $f'(x) = 3x^2$,

b. $f'(x) = 3 - 2x$,

c. $f'(x) = -\frac{1}{2\sqrt{4-x}}$,

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