

ANSWER KEY

1. (a) 6 (b) DNE; $\longrightarrow \pm\infty$ (c) DNE; $\longrightarrow \pm\infty$ (d) 0
(e) 0 (f) 0 (g) DNE; LHL $\neq$ RHL (h) 0 (i) 2
2. (a) $f'(x) = \frac{1}{2\sqrt{x}}$, $g'(x) = \frac{-1}{x^2}$
(b) $y = \frac{1}{2}x + \frac{1}{2}$, $y = -x + 2$
3. See other side for graph.
(a) all points except $x = 1$
(b) all points except $x = -1, 1$
(c) all points except $x = -1, 0, 1, 3$
4. See other side for graphs.
5. (a) $f'(x) = 60x^4 + 20x^3 + 2x + 2$, $\int f(x)dx = 2x^6 + x^5 + \frac{1}{3}x^3 + x^2 + x + C$
(b) $f'(x) = 3(x+1)^2$, $\int f(x)dx = \frac{1}{4}(x+1)^4 + C$
(c) $f'(x) = 9x^2 - 10x + 3$, $\int f(x)dx = \frac{3}{4}x^4 - \frac{5}{3}x^3 + \frac{3}{2}x^2 - x + C$
6. $v(t) = 6t - 2$; $v = 0$ when $t = \frac{1}{3}$, $x = \frac{2}{3}$
7. $x(t) = -16t^2 + 22 = 6 \implies t = 1$; $v(1) = -32$
8. $x(t) = -t^3/6 + v_0t + x_0$; $t = 6$

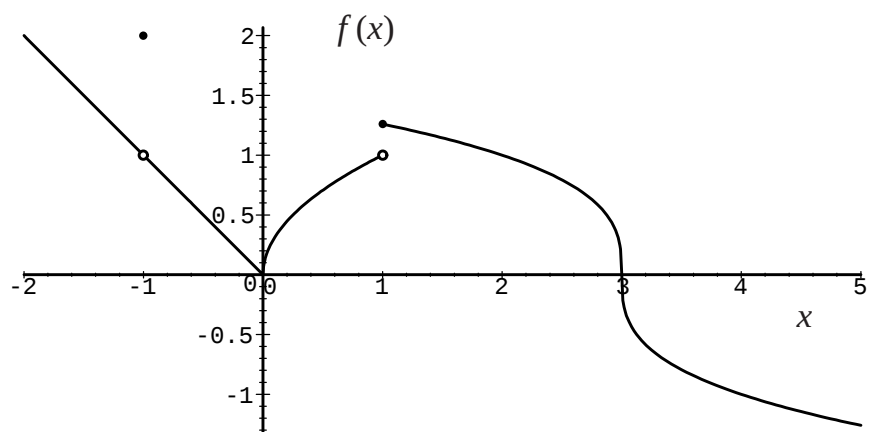


Figure 1: Graph of $f(x)$ for #3.

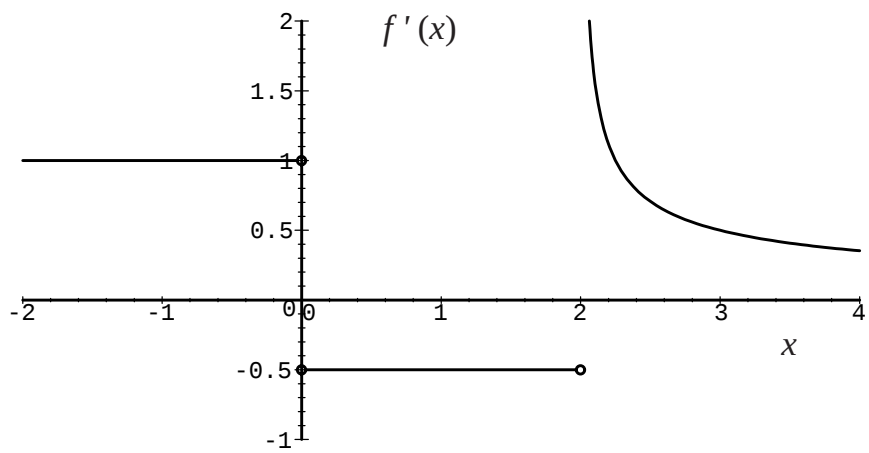
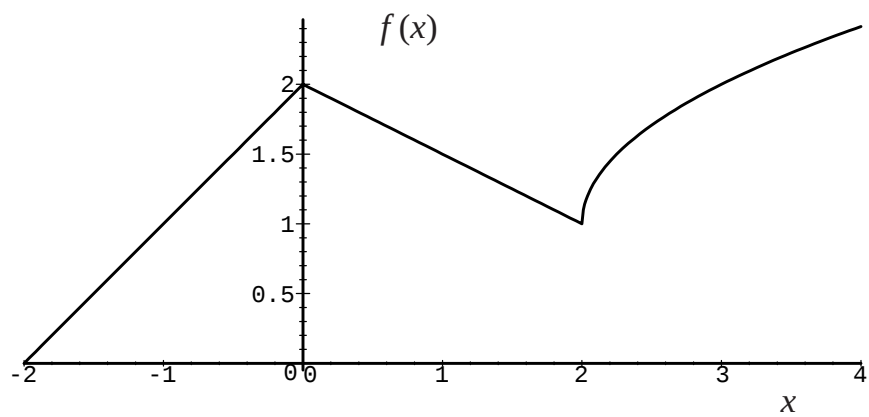


Figure 2: Graphs of $f(x)$ and $f'(x)$ for #4.