

1. Answer the questions about the functions graphed below.

(a) $g(0) = \boxed{-1}$

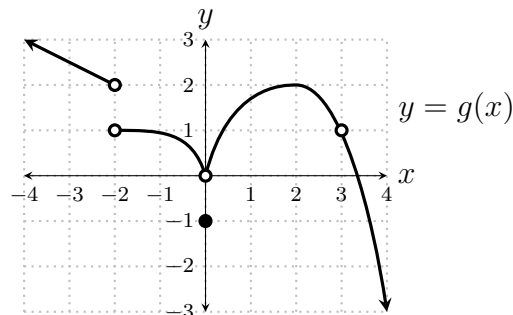
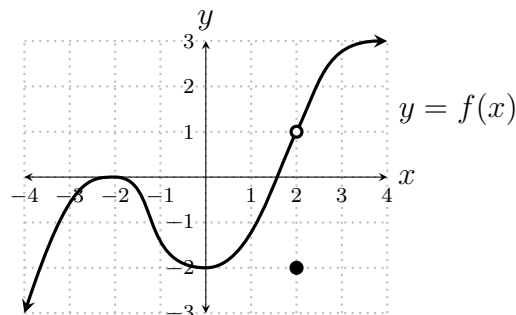
(b) $\lim_{x \rightarrow 0} g(x) = \boxed{0}$

(c) $\lim_{x \rightarrow 2} f(x)g(x) = \lim_{x \rightarrow 2} f(x) \cdot \lim_{x \rightarrow 2} g(x) = 1 \cdot 2 = \boxed{2}$

(d) $\lim_{x \rightarrow -2^+} g(x) = \boxed{1}$

(e)
$$\lim_{x \rightarrow 2} \left(\frac{f(x)}{4 + 2g(x)} \right)^{2/3} = \lim_{x \rightarrow 2} \sqrt[3]{\frac{f(x)}{4 + 2g(x)}} =$$

$$\sqrt[3]{\lim_{x \rightarrow 2} \frac{f(x)}{4 + 2g(x)}} = \sqrt[3]{\frac{1}{4 + 2 \cdot 2}} = \sqrt[3]{\frac{1}{8}} = \left(\frac{1}{8} \right)^{1/3} = \boxed{\frac{1}{2}}$$



2. $\lim_{x \rightarrow -2} (x^2 - 3x)^2 = \left(\lim_{x \rightarrow -2} (x^2 - 3x) \right)^2 = ((-2)^2 - 3 \cdot (-2))^2 = (4 + 6)^2 = 10^2 = \boxed{100}$

3. $\lim_{x \rightarrow 0} e^x(x^3 + 5x + 3) = \lim_{x \rightarrow 0} e^x \cdot \lim_{x \rightarrow 0} (x^3 + 5x + 3) = e^0 \cdot (0^3 + 5 \cdot 0 + 3) = 1 \cdot 3 = \boxed{3}$

4. Draw the graph of **one** function f , with domain $(-4, 4)$, meeting **all** of the following conditions.

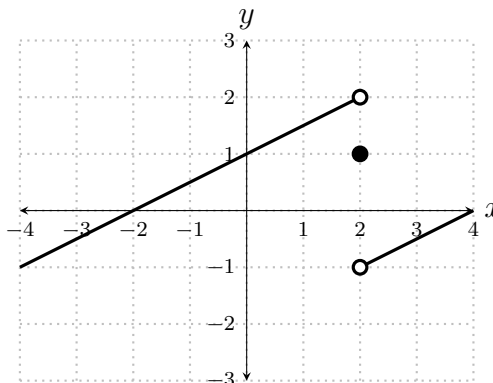
(a) $\lim_{x \rightarrow 2^-} f(x) = 2$

(b) $\lim_{x \rightarrow 2^+} f(x) = -1$

(c) $f(2) = 1$

(d) $\lim_{x \rightarrow -2} f(x) = 0$

(e) $f(-2) = 0$



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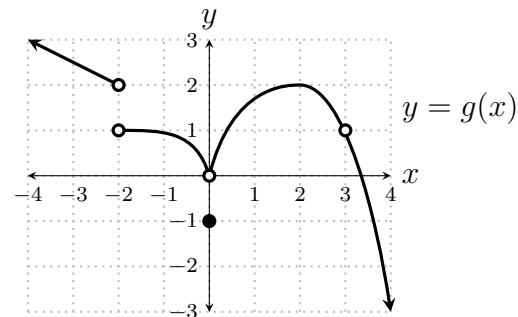
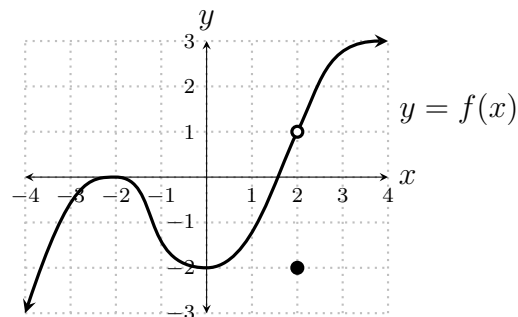
(a) $f(0) = \boxed{-2}$

(b) $\lim_{x \rightarrow 0} f(x) = \boxed{-2}$

(c) $\lim_{x \rightarrow 2} \frac{f(x)}{g(x)} = \frac{\lim_{x \rightarrow 2} f(x)}{\lim_{x \rightarrow 2} g(x)} = \boxed{\frac{1}{2}}$

(d) $\lim_{x \rightarrow -2^-} g(x) = \boxed{2}$

(e) $\lim_{x \rightarrow 2} (f(x) + g(x) + 1)^{3/2} = \lim_{x \rightarrow 2} \sqrt{f(x) + g(x) + 1}^3 = \sqrt{\lim_{x \rightarrow 2} (f(x) + g(x) + 1)}^3 = \sqrt{1 + 2 + 1}^3 = \sqrt{4}^3 = 2^3 = \boxed{8}$



2. $\lim_{x \rightarrow -2} \sqrt{x^2 - 3x + 6} = \sqrt{\lim_{x \rightarrow -2} (x^2 - 3x + 6)} = \sqrt{(-2)^2 - 3 \cdot (-2) + 6} = \sqrt{16} = \boxed{4}$

3. $\lim_{x \rightarrow 3} \left(\frac{1}{x} + \frac{x}{2} \right) = \left(\lim_{x \rightarrow 3} \frac{1}{x} + \lim_{x \rightarrow 3} \frac{x}{2} \right) = \frac{1}{3} + \frac{3}{2} = \frac{2}{2} \cdot \frac{1}{3} + \frac{3}{2} \cdot \frac{3}{2} = \frac{2}{6} + \frac{9}{6} = \boxed{\frac{11}{6}}$

4. Draw the graph of **one** function f , with domain $(-4, 4)$, meeting **all** of the following conditions.

(a) $\lim_{x \rightarrow -2^-} f(x) = 1$

(b) $\lim_{x \rightarrow -2^+} f(x) = -2$

(c) $f(-2) = 1$

(d) $\lim_{x \rightarrow 2} f(x) = 0$

(e) $f(2) = 0$

