

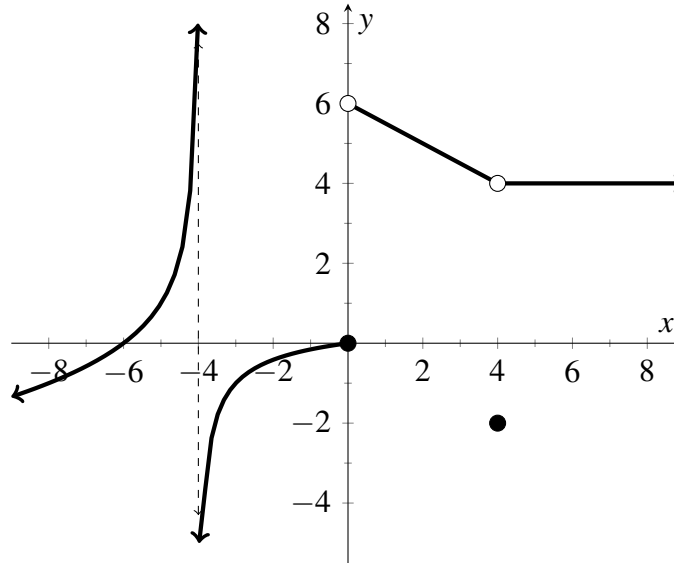
Name: _____

_____ / 25

Circle one: Faudree (F01) | Bueller (F02) | VanSpronsen (UX1)

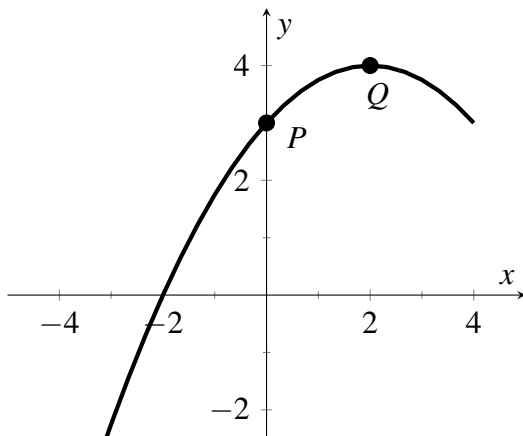
25 points possible. No aids (book, calculator, etc.) are permitted. Show all work and use proper notation for full credit.

1. [9 points] Use the graph of the function $f(x)$ to answer the following questions.



- | | | |
|---|--|--|
| a. $f(-6) =$ _____ | b. $f(0) =$ _____ | c. $f(4) =$ _____ |
| d. $\lim_{x \rightarrow 0^+} f(x) =$ _____ | e. $\lim_{x \rightarrow 0^-} f(x) =$ _____ | f. $\lim_{x \rightarrow 0} f(x) =$ _____ |
| g. $\lim_{x \rightarrow -4^+} f(x) =$ _____ | h. $\lim_{x \rightarrow 6} f(x) =$ _____ | i. $\lim_{x \rightarrow 4} f(x) =$ _____ |

2. [4 points] Consider the following graph $y = f(x)$.

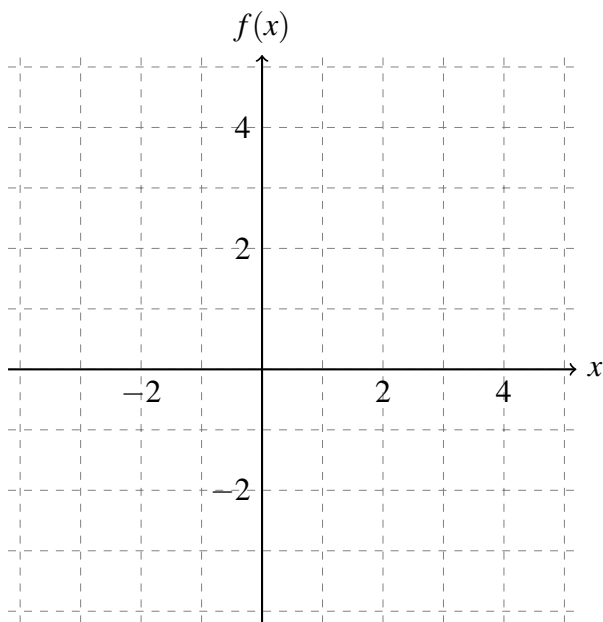


- Sketch the secant line through points P and Q . (Add the line to the graph at left.)
- Find the slope of the secant line through the same points $P(0, 3)$ and $Q(2, 4)$.
- Sketch the tangent line through point P .

3. [8 points] On the axes below, **sketch the graph** of the function

$$f(x) = \begin{cases} 1-x & x < 1 \\ -2 & x = 1 \\ \frac{1}{1-x} & x > 1. \end{cases}$$

Then compute the requested values.



a. $f(1) =$

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

c. $\lim_{x \rightarrow 1} f(x) =$

Justify your answer to part c:

4. [4 points] Compute the following limits.

a. $\lim_{x \rightarrow 3} \frac{x-4}{(x-3)^2} =$

b. $\lim_{x \rightarrow 0^+} \frac{2}{\sin(x)} =$