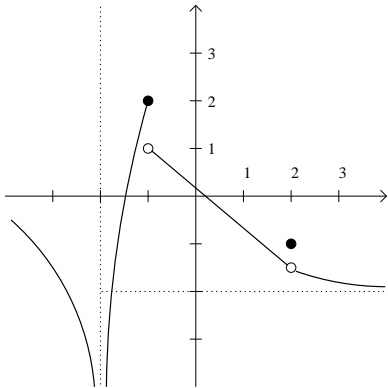


### Exam #1

- Let  $f(x) = 3x - 5$  and  $g(x) = x^2 + 4$ . Is the function  $f(g(x))$  even, odd or neither? Justify your answer.
- Consider the function  $r(t) = -10 + 25 \sin\left(\frac{t}{8}\right)$ . What is the amplitude of  $r(t)$ ? What is the period of  $r(t)$ ?
- Consider the graph of the function  $y = f(x)$  given below.



Compute the following limits: ( $\pm\infty$  is a valid limit; write DNE if the limit doesn't exist)

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

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

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

- Compute the following limit:

$$\lim_{x \rightarrow 0} \frac{\sin 2x \cos 3x}{4x}$$

- Let  $\ell(x) = \frac{x^2 + 5x - 6}{4x^2 - 4}$ . Compute the following limits:

$$(a) \lim_{x \rightarrow \infty} \ell(x)$$

$$(b) \lim_{x \rightarrow 1} \ell(x)$$

- For the function  $m(t)$  given below, determine what value of the constant  $A$  will make  $m(t)$  a continuous function.

$$m(t) = \begin{cases} t^3 - 1 & , t \leq -1 \\ 3t + A & , t > -1 \end{cases}$$

- Compute the slope of the line passing through the points  $(-1, 3)$  and  $(7, -1)$ .
- Compute the following limits:

$$\lim_{x \rightarrow \infty} (\sqrt{x^2 + 2x} - x)$$

$$\lim_{x \rightarrow -\infty} \frac{8x + 5}{\sqrt{2x^2 + 3x} - 1}$$