

Math 114 Spring 2018
Calculus I HW 1
Due Friday, January 26

- (a) Find two real numbers that solve $x^2 + 7x + 5 = 0$.
(b) Factor $x^3 - 27$.
- Based on the graphs below, estimate the following limits:
 - $\lim_{x \rightarrow 1} f(x)$
 - $\lim_{x \rightarrow -2} g(x)$
 - $\lim_{x \rightarrow 1} h(x)$
 - $\lim_{x \rightarrow 1} j(x)$

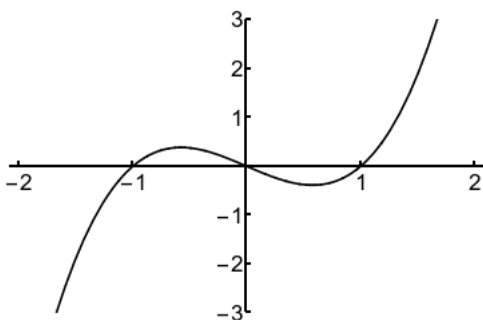


Figure 1: $f(x)$

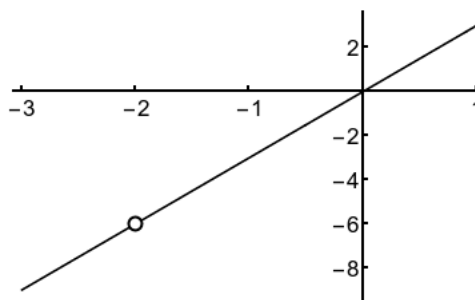


Figure 2: $g(x)$

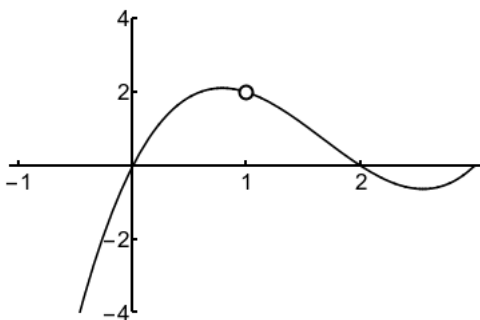


Figure 3: $h(x)$

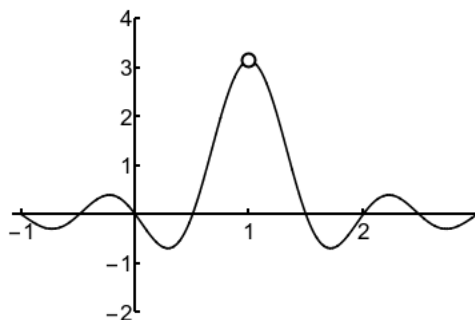


Figure 4: $j(x)$

3. If $|f(x)| \leq |x|$ and $|g(x)| \leq 7 + x^2$, what can we say about $|f(x) + g(x)|$?

4. If $|f(x)| \geq 7$ and $|g(x)| \leq 3$, what can we say about $|f(x) + g(x)|$?

5. ★

(a) Find a pair of real numbers x and y such that $|x + y| < |x| + |y|$.

(b) Find a pair of real numbers x and y such that $|x + y| = |x| + |y|$.

(c) Find a pair of real numbers x and y such that $|x + y| > |x| + |y|$.

6. ★

(a) Find a pair of real numbers x and y such that $|x + y| > |x| - |y|$.

(b) Find a pair of real numbers x and y such that $|x + y| = |x| - |y|$.

(c) Find a pair of real numbers x and y such that $|x + y| < |x| - |y|$.