# Math 221 Sec 003 Quiz 6 Solutions

For this quiz, let $f(x) = \dfrac{2x^2 + 8x + 6}{x^2 + 5x + 6}$.

1. (a) Calculate the following limit:

$$\lim_{x \to +\infty} f(x).$$

(b) Find all vertical asymptotes of the function $f(x)$.

Solution:

(a)

$$\lim_{x \to +\infty} \frac{2x^2 + 8x + 6}{x^2 + 5x + 6} = 2 \qquad \text{(correct answer +2)}$$
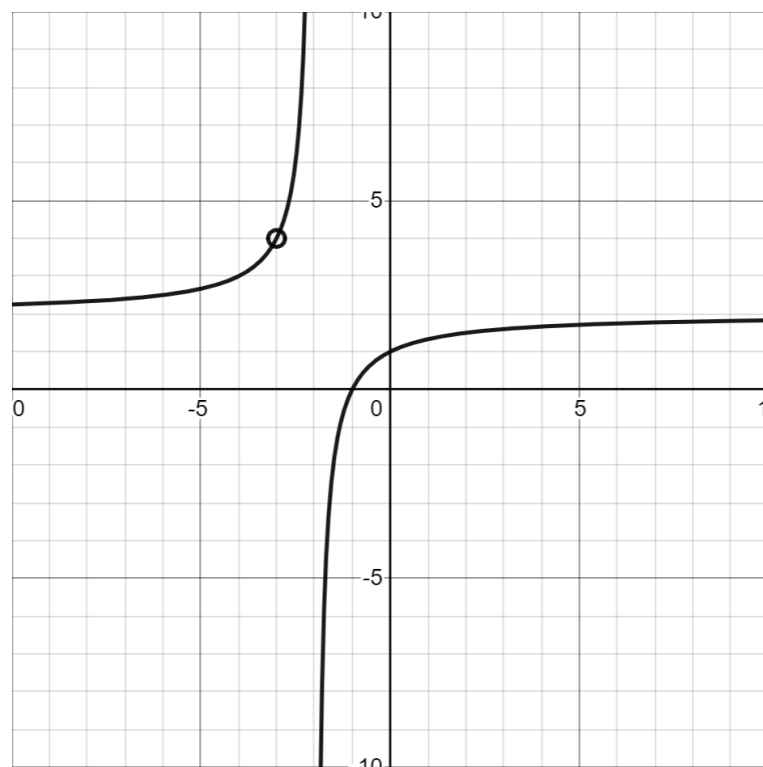
(b)

$$\frac{2x^2 + 8x + 6}{x^2 + 5x + 6} = \frac{2(x+1)(x+3)}{(x+2)(x+3)} \qquad \text{(factoring +2)}$$

Vertical asymptote at $x = -2$

(correct answer +1)

2. Graph the function $y = f(x)$.

Solution:



(vertical asymptote $+1$)

(horizontal asymptote $+1$)

(hyperbola $+2$)

(hole $+1$)