12-4 Practice Problems

For each problem, find the limit of $f(x)$ as x approaches infinity. Use DESMOS to verify your result.

12. $f(x) = \dfrac{4x^2}{x^2+3}$

13. $f(x) = \dfrac{-(x^2+3)}{(2-x)^2}$

14. $f(x) = \dfrac{2x^2-6}{(x-1)^2}$

15. $f(x) = \left[\dfrac{x}{(x+1)^2} - 4\right]$

16. $f(x) = \left[7 + \dfrac{2x^2}{(x+3)^2}\right]$

17. $f(x) = \left[\dfrac{1}{3x^2} - \dfrac{5x}{(x+2)}\right]$

18. $f(x) = \left[\dfrac{x}{2x+1} + \dfrac{3x^2}{(x-3)^2}\right]$

19. $f(x) = \left[\dfrac{3x}{1-x}\right]$

20. $f(x) = \left[\dfrac{x^2}{x^2+4}\right]$

21. $f(x) = \left[\dfrac{2x}{1-x^2}\right]$

22. $f(x) = 1 - \dfrac{3}{x^2}$

Answer Key

12. $\lim_{x\to\infty} f(x) = 4$

13. $\lim_{x\to\infty} f(x) = -1$

14. $\lim_{x\to\infty} f(x) = 2$

15. $\lim_{x\to\infty} f(x) = -4$

16. $\lim_{x\to\infty} f(x) = 9$

17. $\lim_{x\to\infty} f(x) = -5$

18. $\lim_{x\to\infty} f(x) = \frac{7}{2}$

19. $\lim_{x\to\infty} f(x) = -3$

20. $\lim_{x\to\infty} f(x) = 1$

21. $\lim_{x\to\infty} f(x) = 0$

22. $\lim_{x\to\infty} f(x) = 1$