

Name: _____

MA 2310 Practice Test 1 version 2

1. Graph the following functions on the same graph $f(x) = 3x^{1/2}$ and $g(x) = x + 2$. Compute the points of intersection (if there are any) for the two functions.

2. Compute the following

(a) $\sin(7\pi/4)$

(b) $\tan(\arcsin(\frac{x+2}{x-2}))$

3. Compute the following limits (show work).

(a) $\lim_{x \rightarrow 3} \frac{x^2 - 6x + 9}{x^2 - 9}$

(b) $\lim_{x \rightarrow 0} \frac{1 - \cos(x)}{x^2}$

(c) $\lim_{x \rightarrow \infty} \frac{x^{11} - x + 1}{1 - x^3}$

(d) $\lim_{x \rightarrow \infty} \frac{x^7 - x + 1}{1 - x^{11}}$

(e) $\lim_{x \rightarrow \infty} \frac{4x^{11} - 5x + 11}{3 - 2x^{11}}$

4. Determine if the function can be made continuous at the point x_0 . And if it can find the value c so that the function is continuous at x_0 .

$$f(x) = \begin{cases} \frac{2-2\cos(x)}{3x^2} & : x \neq 0 \\ c & : x = 0 \end{cases} \quad \text{where } x_0 = 0.$$

5. Compute the horizontal and vertical asymptotes.

$$f(x) = \frac{x^2 - x - 6}{x^2 - 4}$$

6. Compute the derivative using the Definition for $f(x) = 2x^2 - 2$.

7. Compute the derivatives of the following functions using the rules.

(a) $f(x) = x(x^{1/2} - x + 1)$

(b) $f(x) = 3 \sin(x) - x^3$

(c) $f(x) = \frac{x^2+1}{x}$

8. Compute the equation of the tangent line for $f(x) = x^3 + 2x + 1$ at the point $x_0 = 2$.