

Math 1210-1 Test 1

Name: _____

ST# _____

Show all your work in a neat and organized manner. Write your answers and solutions in the space provided. Please box your answers. You may use a calculator.

Math 1210-1 Test 1

1. (5 pts) Find the equation of the line passing through the point $(3, -1)$ and perpendicular to $7x - 9y = 3$.

2. (8 pts) If $f(x) = x^3 - 2x + 7$, find the indicated values. (**Do not simplify b and c .**)

(a) $f(-1)$

(b) $f(\frac{1}{t})$

(c) $f(x + h)$

3. (10 pts) Determine which of the following are functions. If not a function, **explain** why not.

(a)

x	y
b	♠
h	♥
#	♣
h	♦
♠	♠

(b)

x	y
⊙	⊕
★	⊗
⊖	⊗
*	◇
⊗	⊕

(c)

x	y
⊙	†
◇	□
♠	♥
♥	♥
◇	△

(d)

x	y
h	b
♠	♥
◇	□
h	b
★	◇

4. (15 pts) Given $f(x) = 3x^2 - 5x + 8$ and $g(x) = \frac{x}{x-5}$, find each of the following: (**Do not simplify.**)

(a) $(f - g)(x)$

(b) $(f \cdot g)(x)$

(c) $(f \circ g)(x)$

(d) $(f \circ f)(x)$

(e) $(g)^2(x)$

5. (10 pts) What is the period, amplitude, vertical and horizontal shift of

$$y = 5 \cos [2(x + 3)] - 4?$$

6. (20 pts) Find the indicated limits.

(a) $\lim_{x \rightarrow 5} (x^2 - 7)$

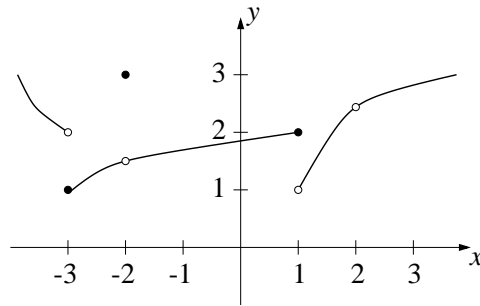
(b) $\lim_{x \rightarrow -3} \frac{x^2 - 4x - 21}{x + 3}$

(c) $\lim_{t \rightarrow 0} \frac{\sin^2 t}{t}$

(d) $\lim_{x \rightarrow \infty} \frac{3x^4 + x^2}{7x^4 - 9x^3 + 7x - 1}$

(e) $\lim_{t \rightarrow 2^-} \frac{x}{(x - 2)(x - 1)}$

7. (22 pts) For the function f graphed in the figure below, find the following:



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

(b) $f(-2)$.

(c) Is f continuous at -2 ? Why or why not?

(d) $\lim_{x \rightarrow 1} f(x)$

(e) $f(1)$

(f) Is f right continuous or left continuous or neither at 1 ?

(g) $\lim_{x \rightarrow 2} f(x)$

(h) $f(2)$

(i) Is f continuous at 2 ? Why or why not?

(j) $\lim_{x \rightarrow -3^-} f(x)$

8. (10 pts) Show $h(x) = x^3 - x^2 + 7x - 2$ has a root between $x = 0$ and $x = 1$ using the Intermediate Value Theorem. (It might help to draw a picture.)