

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Last 4 digits of student ID #: \_\_\_\_\_

This exam has ten multiple choice questions (six points each). Additional blank sheets are available if necessary for scratch work. No books or notes may be used. Turn off your cell phones and do not wear ear-plugs during the exam. You may use a calculator, but not one which has symbolic manipulation capabilities.

**On the multiple choice problems:**

1. You must give your *final answers* in the *multiple choice answer box* on the front page of your exam.
2. Carefully check your answers. No credit will be given for answers other than those indicated on the *multiple choice answer box*.

**Multiple Choice Answers**

Question					
1	A	B	C	D	E
2	A	B	C	D	E
3	A	B	C	D	E
4	A	B	C	D	E
5	A	B	C	D	E
6	A	B	C	D	E
7	A	B	C	D	E
8	A	B	C	D	E
9	A	B	C	D	E
10	A	B	C	D	E

**Exam Scores**

Question	Score	Total
MC		60
Webassign Score		60
Percentage		100

**Record the correct answer to the following problem on the front page of this exam.**

(1) Given  $f(x) = x^2$  and  $g(x) = \sqrt{x}$ . Which one of the following statements is true?

- A)  $g(x)$  is the inverse of  $f(x)$ .
- B)  $g(f(x)) = x$
- C)  $f(x)$  does not have an inverse because  $f(x)$  is not one-to-one.
- D)  $g(x)$  is the inverse of  $f(x)$  but  $f(x)$  is not the inverse of  $g(x)$ .
- E) None of the other statements are true.

(2) Find  $f(g(x))$  for

$$f(x) = \sqrt{\frac{1}{x}}, \quad g(x) = \frac{1}{x+1}.$$

- A)  $\sqrt{\frac{1}{\frac{1}{x} + 1}}$
- B)  $\sqrt{\frac{x+1}{x}}$
- C)  $x+1$
- D)  $\sqrt{x+1}$
- E)  $\frac{1}{\sqrt{\frac{1}{x} + 1}}$

(3) Describe the shifting, stretching, or reflecting (flipping) across the  $x$ -axis transformations when transforming

$$f(x) = x^3 \text{ to } g(x) = (x-1)^3 + 2.$$

- A)  $f(x)$  is shifted left by 2, up by 1.
- B)  $f(x)$  is shifted right by 2, up by 1.
- C)  $f(x)$  is shifted left by 2, reflected, and shifted down by 1.
- D)  $f(x)$  is shifted left by 1, and shifted up by 2.
- E)  $f(x)$  is shifted right by 1, and shifted up by 2.

Record the correct answer to the following problem on the front page of this exam.

- (4) A graph is given parametrically by the equations

$$x(t) = 2t^2 + 2, \quad y(t) = 4t^3 - 2.$$

Find the point on the graph corresponding to when  $t = -1$ .

- A)  $(-6, 4)$
  - B)  $(2, 5)$
  - C)  $(4, -6)$
  - D)  $(-4, 3)$
  - E)  $(0, 2)$
- (5) Find the average rate of change of  $f(x) = 2x^2 + 2$  as  $x$  changes from 1 to 3.
- A) 5
  - B) 8
  - C)  $-8$
  - D) 6
  - E)  $-6$
- (6) A secant line with slope  $m = 3$  intersects the graph of  $f(x)$  at two points. If the  $x$  values of the two points are  $x_1 = 1$  and  $x_2 = 3$ . What is the average rate of change of  $f(x)$  as  $x$  changes from  $x_1$  to  $x_2$ ?
- A) 3
  - B)  $\frac{3}{2}$
  - C) The average rate can not be determined since the  $y$  values are not given.
  - D)  $\frac{2}{3}$
  - E) 2

Record the correct answer to the following problem on the front page of this exam.

(7) Find the  $f^{-1}(x)$  for  $f(x) = \frac{x^3 - 2}{5}$

A)  $\sqrt[3]{5x + 2}$

B)  $\frac{5}{x^3 - 2}$

C)  $x$

D)  $5(x^3 + 2)$

E)  $\frac{x - \sqrt[3]{2}}{5}$

(8) The difference quotient for a certain function  $f(x)$  is given by  $2x + 2h - 1$ . Find the average rate of change of  $f(x)$  when  $x$  changes from  $x = 2$  to  $x = 4$ .

A)  $2 + 2h$

B) The rate can not be determined since  $f(x)$  is not given.

C) 7

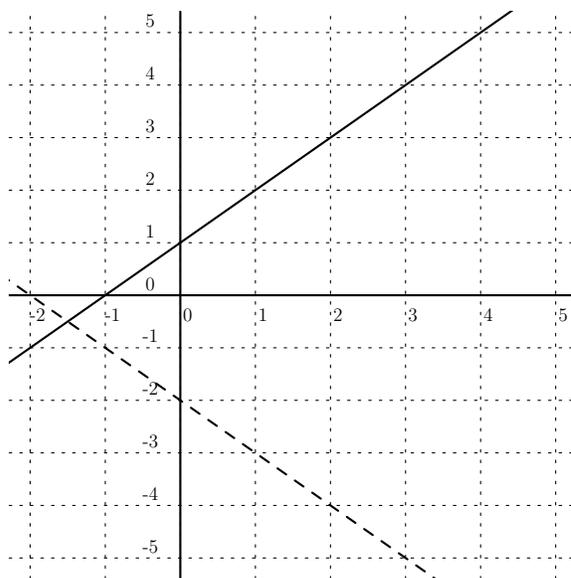
D) 1

E) 2

**Record the correct answer to the following problem on the front page of this exam.**

(9) From the graph below,  $f(x)$  is represented by the solid line, and  $g(x)$  is represented by the dashed line. Find  $g(f(1))$ .

- A) 1
- B) 2
- C) 3
- D) -3
- E) -4



Record the correct answer to the following problem on the front page of this exam.

(10) For the graph below, which one of the following statements is true?

- A) The graph passes the horizontal line test so it is one-to-one.
- B) The graph is not one-to-one because it fails the vertical line test.
- C) The graph fails the horizontal line test so it is not one-to-one.
- D) The graph fails both the horizontal line test and the vertical line test so it is not one-to-one.
- E) The graph is one-to-one because  $x$  is a function of  $y$ .

