

MATH 161 EXAM II NAME: _____

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[Run: 03/24/2013 at 13:34 Seed: 6746. Order of Checkable Items: Random.]

Response Grid (Check the appropriate boxes thus:)

Question	a	b	c	d	e
1					
2					
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II-1. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = +x^3 - 3x^2 - 9x + 7$$

What is Slope-sign of f near -1 ?

- a. (\nearrow, \nearrow) b. (\nearrow, \searrow) c. (\searrow, \nearrow) d. (\searrow, \searrow)
 e. None of the preceding

II-2. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = -3x^2 - 12x + 16$$

For which input(s), if any, is Concavity-sign of $f = (\cup, \cup)$?

- a. -2 b. All inputs c. All inputs except -2
 d. No such input
 e. None of the preceding

II-3. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = +x^3 - 3x - 2$$

Where is f concave up?

- a. For $x < 0$ b. For $x > 0$ c. For $x < +2$ d. For $x > +2$
 e. None of the preceding

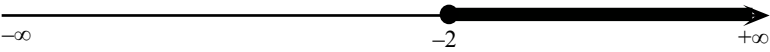
II-4. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = -6x - 5$$

and let g be the function specified by the global input-output rule

$$x \xrightarrow{g} g(x) = -8x - 9$$

find the input(s), if any, for which $g(x) \geq f(x)$.

- a. 
 b. 
 c. 
 d. 
 e. None of the preceding

II-5. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = +x^2 - 5x - 5$$

and let g be the function specified by the global input-output rule

$$x \xrightarrow{g} g(x) = -4x + 1$$

For how many input(s), if any, do the functions f and g return the same output?

- a. None b. One c. Two d. Three
e. None of the preceding

II-6. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = -\frac{3}{2}x^2 - 6x + 8$$

Locate $x_{0\text{-slope}}$

- a. $x_{0\text{-slope}} = -4$ b. $x_{0\text{-slope}} = +4$ c. $x_{0\text{-slope}} = +9$
d. No such input
e. None of the preceding

II-7. Let f be an *affine* function. Given the **Boundary Value Conditions**

$$\text{AND} \begin{cases} f(x) |_{x \leftarrow +2} = +1 \\ f(x) |_{x \leftarrow -3} = -2 \end{cases}$$

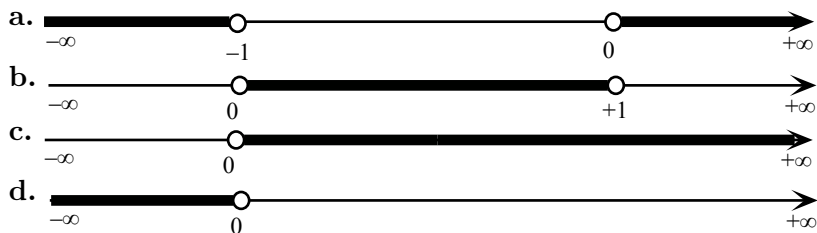
find the *slope* of the global graph of f .

- a. $+\frac{3}{5}$ b. $-\frac{3}{5}$ c. $+\frac{5}{3}$ d. $-\frac{5}{3}$
e. None of the preceding

II-8. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = -x(x+1)^2$$

Where is the output of f *positive*?



- e. None of the preceding

II-9. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = -12x + 4$$

Find the 0-height input(s) of f , if any.

- a. -3 b. $+3$ c. $-\frac{1}{3}$ d. $+\frac{1}{3}$
e. None of the preceding

II-10. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = -3x^2 - 6x + 1$$

What is(are) the lowest bounded *output(s)*, if any?.

a. -1 **b.** $+1$ **c.** -48 **d.** No such output

e. None of the preceding

II-11. Let f be the function specified by the global input-output rule

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

Where is the output of f equal to 0?

a. $0, +2$ **b.** $+2$ **c.** 0 **d.** No such input

e. None of the preceding

II-12. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = -3x^3 + x^2 - 5x - 11$$

Where is the slope of f equal to 0?.

a. -2 **b.** $+3$ **c.** $+2, -5$ **d.** Nowhere

e. None of the preceding

II-13. Let the function f be specified by the global input-output rule

$$x \xrightarrow{f} f(x) = -x^2 + 4x + 12$$

For which input(s), if any, is the output of f equal to 0?

a. $-2, +6$ **b.** $+2, -6$ **c.** $+2$ **d.** No such input

e. None of the preceding

II-14. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = +3(x - 5)^2 + 2x + 13$$

Find Slope-sign of f near ∞ .

a. (\swarrow, \swarrow) **b.** (\swarrow, \searrow) **c.** (\searrow, \swarrow) **d.** (\searrow, \searrow)

e. None of the preceding

II-15. Let f be the *affine* function specified by the **Boundary Value Conditions**:

$$\text{AND } \begin{cases} f(+3) = +1 \\ f(-3) = +3 \end{cases}$$

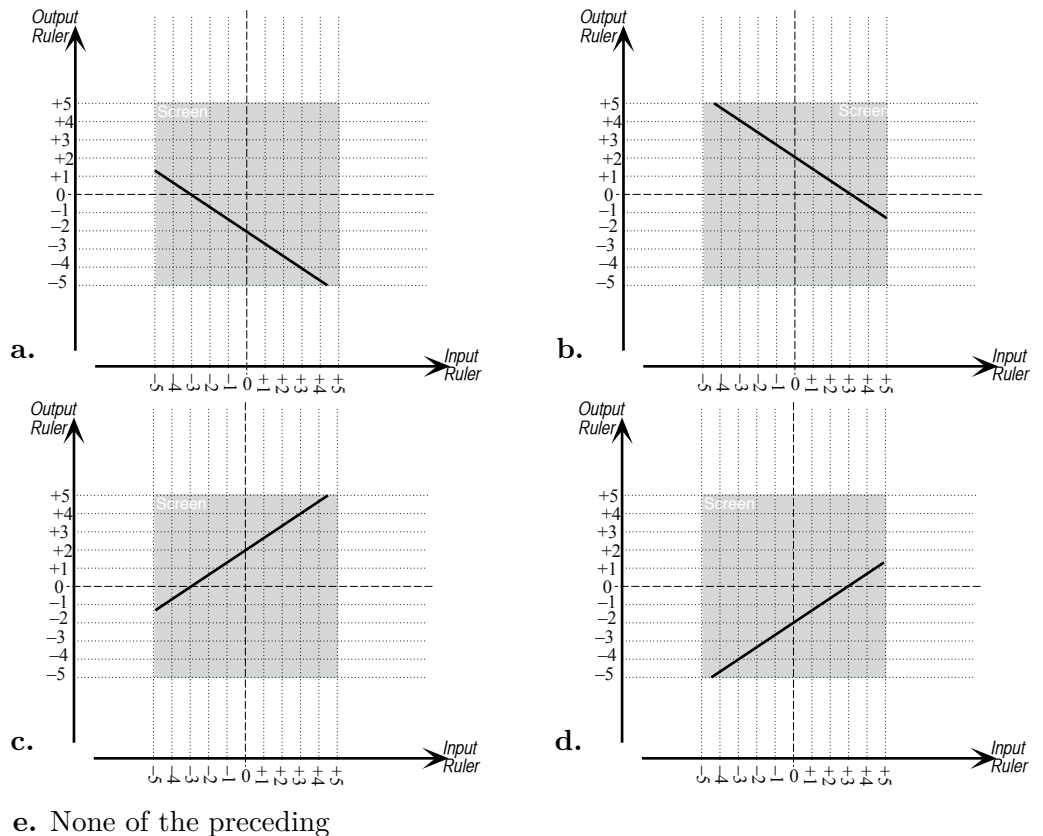
Find the global input-output rule that specifies f .

- a. $x \xrightarrow{f} f(x) = +3x + 1$ b. $x \xrightarrow{f} f(x) = +\frac{1}{3}x + 1$
 c. $x \xrightarrow{f} f(x) = +3x - 3$ d. $x \xrightarrow{f} f(x) = -\frac{1}{3}x + 2$
 e. None of the preceding

II-16. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = +\frac{2}{3}x + 2$$

find its global graph.



II-17. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = -3x^2 + 18x - 55$$

Near which input(s), if any, is the slope of f positive?

- a. All inputs smaller than -3 b. All inputs smaller than $+3$
 c. All inputs larger than -3 d. All inputs larger than $+3$

e. None of the preceding

II-18. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = +(x - 3)(x + 2)$$

Where, if at all, is the output of f *positive*?

- a. Nowhere except in an *interval*
- b. Everywhere except in an *interval*
- c. Nowhere
- d. Everywhere
- e. None of the preceding

II-19. Let f be the function specified by the global input-output rule

$$x \xrightarrow{f} f(x) = +3(-x + 4)^2 - 2x + 13$$

Find Height-sign of f near ∞ .

- a. (+, +) b. (+, -) c. (-, +) d. (-, -)
- e. None of the preceding

II-20. Given the function f whose global input-output rule is

$$x \xrightarrow{f} f(x) = -(x - 5)^2(x + 3)$$

what is Concavity-sign f near $+5$?

- a. (U, U) b. (U, \cap) c. (\cap , U) d. (\cap , \cap)
- e. None of the preceding