

This review is identical in format to that of the exam. Only the actual numerical values and question order will vary. (There will also be more space provided for FR problem on the exam.)

Multiple-Choice: (32 questions—2 points each)—See multiple-choice pack

Free-Response: (Total 30 points...exact points are listed under the problem number)
On the exam, you must show a reasonable amount of work that leads to your answer. Where it is impossible to show work, explain the mental leaps that you made to draw your conclusion.

33. Evaluate the piecewise function at the designated x-values. (6 points)

$$f(x) = \begin{cases} -3x + 5, & x \leq -1 \\ 2x^2 + 4, & -1 < x < 2 \\ 19 - 6x, & x \geq 2 \end{cases}$$

- A. $f(-3)=$ B. $f(-1)=$ C. $f(0)=$ D. $f(2)=$ E. $f(10)=$
F. What are the "break points" of this function?

#34-39: Perform the indicated operations on the given functions. List any domain restrictions. (12 points)

$$f(x) = -2x^2 + 3x - 5$$

$$g(x) = 2x + 3$$

$$h(x) = 3x - 4$$

34. $f + g =$ (1 point)	35. $f - g =$ (1 point)
36. $fg =$ (2 points)	37. $\frac{g}{h} =$ (2 points)
38. $3g + 4h$ (3 points)	39. $g(3) + h(4) =$ (2 points)

#40-43: Find the inverse of each function. (12 points)

(Don't forget inverse function notation for your final answer!)

40. (2 points) $f(x) = \{(11, -2), (4, -1), (8, 3), (7, 5), (0, 10)\}$	41. $g(x) = -3x + 2$ (3 points)
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Ch.2 (A2) Free-Response (FR) Review Sheet

<p>42. $h(x) = -5x^3 - 9$ (3 points)</p>	<p>43. $j(x) = \frac{x+2}{x-7}$ (4 points)</p>
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#44-45: Given an equation, (a) identify the basic function, (b) write the transformations in order in words, and (c) graph the function. (1 points per box = 6 points)

EQUATION	BASIC FXN	IN WORDS	GRAPH
44. $f(x) = (x + 2)^3 - 1$			
45. $g(x) = -2(x - 1)^2 + 3$			

Name _____

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**Compute the exact value of the function for the given x-value without using a calculator.**

1) $f(x) = 4x$ for $x = 3$ 1) _____

- A) 81 B) 256 C) 64 D) 12

2) $f(x) = 4x$ for $x = -3$ 2) _____

- A)
- $\frac{1}{81}$
- B) -12 C)
- $-\frac{1}{12}$
- D)
- $\frac{1}{64}$

3) $f(x) = 5 \cdot 16^x$ for $x = -3/2$ 3) _____

- A)
- $-\frac{5}{64}$
- B)
- $\frac{5}{64}$
- C) 320 D) 60

Perform the requested operation or operations. Find the domain of each.

4) $f(x) = 7x + 5$, $g(x) = 6x^2$ 4) _____

Find $(f + g)(x)$.

- A)
- $7x + 5 + 6x^2$
- ; domain:
- $(-\infty, \infty)$
- B)
- $\frac{7x + 5}{6x^2}$
- ; domain:
- $(-\infty, \infty)$
-
- C)
- $42x^3 + 30x$
- ; domain:
- $(-\infty, \infty)$
- D)
- $7x + 5 - 6x^2$
- ; domain:
- $(-\infty, \infty)$

5) $f(x) = 7x + 5$, $g(x) = 4x^2$ 5) _____

Find $(fg)(x)$.

- A)
- $28x^2 + 20x$
- ; domain:
- $(-\infty, \infty)$
- B)
- $28x + 20$
- ; domain:
- $(-\infty, \infty)$
-
- C)
- $4x^2 + 7x + 5$
- ; domain:
- $(-\infty, \infty)$
- D)
- $28x^3 + 20x^2$
- ; domain:
- $(-\infty, \infty)$

6) $f(x) = 3x + 2$; $g(x) = 2x - 3$ 6) _____

Find f/g .

- A)
- $(f/g)(x) = \frac{3x + 2}{2x - 3}$
- ; domain
- $\{x \mid x \neq -\frac{2}{3}\}$
- B)
- $(f/g)(x) = \frac{2x - 3}{3x + 2}$
- ; domain
- $\{x \mid x \neq -\frac{2}{3}\}$
-
- C)
- $(f/g)(x) = \frac{3x + 2}{2x - 3}$
- ; domain
- $\{x \mid x \neq \frac{3}{2}\}$
- D)
- $(f/g)(x) = \frac{2x - 3}{3x + 2}$
- ; domain
- $\{x \mid x \neq \frac{3}{2}\}$

Perform the requested operation or operations.

7) $f(x) = 7x + 11$; $g(x) = 2x - 1$ 7) _____

Find $f(g(x))$.

- A)
- $f(g(x)) = 14x + 10$
- B)
- $f(g(x)) = 14x + 4$
-
- C)
- $f(g(x)) = 14x + 21$
- D)
- $f(g(x)) = 14x + 18$

8) $f(x) = \frac{x-7}{9}$; $g(x) = 9x + 7$, find $g(f(x))$.

8) _____

A) $g(f(x)) = x$

B) $g(f(x)) = x + 14$

C) $g(f(x)) = 9x + 56$

D) $g(f(x)) = x - \frac{7}{9}$

9) $f(x) = 4x^2 + 5x + 3$; $g(x) = 5x - 4$, find $g(f(x))$.

9) _____

A) $g(f(x)) = 4x^2 + 25x + 11$

B) $g(f(x)) = 20x^2 + 25x + 11$

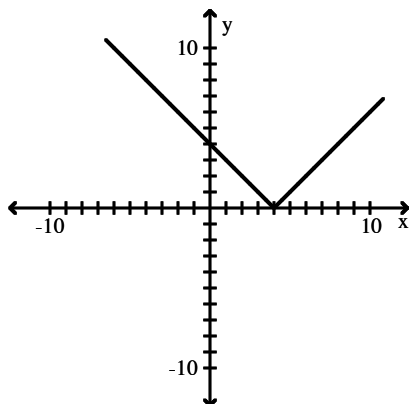
C) $g(f(x)) = 20x^2 + 25x + 19$

D) $g(f(x)) = 4x^2 + 5x - 1$

Match the function with the graph.

10)

10) _____



A) $y = |x - 4| + 1$

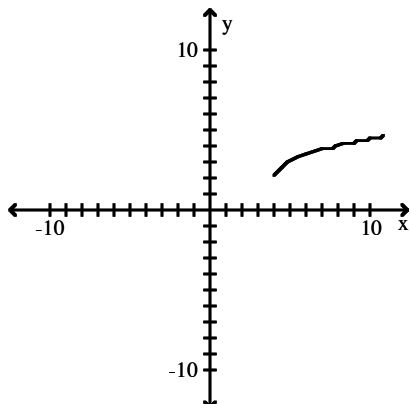
B) $y = |x| - 4$

C) $y = |x - 4|$

D) $y = |x + 4|$

11)

11) _____



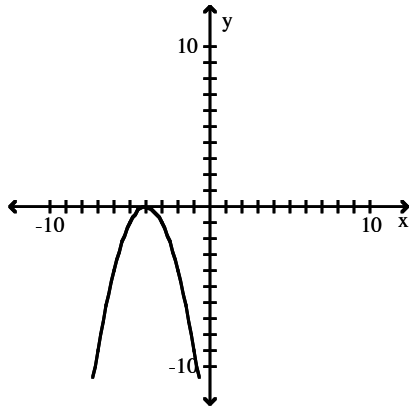
A) $y = \sqrt{x - 4} + 2$

B) $y = \sqrt{x - 4}$

C) $y = \sqrt{x + 4}$

D) $y = \sqrt{x + 2}$

12)



12) _____

A) $g(x) = -x^2 + 4$

B) $g(x) = -(x + 4)^2$

C) $g(x) = (x - 4)^2$

D) $g(x) = -x^2 - 4$

Find functions f and g so that $h(x) = f(g(x))$.

13) $y = |8x + 2|$

13) _____

A) $f(x) = -|x|$, $g(x) = 8x + 2$

B) $f(x) = x$, $g(x) = 8x + 2$

C) $f(x) = |x|$, $g(x) = 8x - 2$

D) $f(x) = |x|$, $g(x) = 8x + 2$

14) $y = \frac{1}{x^2 - 9}$

14) _____

A) $f(x) = 1/9$, $g(x) = x^2 - 9$

B) $f(x) = 1/x^2$, $g(x) = -1/9$

C) $f(x) = 1/x^2$, $g(x) = x - 9$

D) $f(x) = 1/x$, $g(x) = x^2 - 9$

Fill in the blanks to complete the statement.

15) The graph of $y = -\sqrt{x + 5}$ can be obtained from the graph of $y = \sqrt{x}$ by shifting horizontally ? units to the ? and reflecting across the ? -axis.

15) _____

A) -5; left; x

B) 5; left; y

C) 5; left; x

D) 5; right; x

Describe how the graph of $y=x^2$ can be transformed to the graph of the given equation.

16) $y = (x - 14)^2 + 8$

16) _____

A) Shift the graph of $y = x^2$ left 14 units and then up 8 units.

B) Shift the graph of $y = x^2$ left 14 units and then down 8 units.

C) Shift the graph of $y = x^2$ right 14 units and then up 8 units.

D) Shift the graph of $y = x^2$ up 14 units and then right 8 units.

Find a general form equation for the line through the pair of points.

17) (-1, 5) and (7, 1)

17) _____

A) $4x + 8y + 36 = 0$

B) $4x + 8y - 36 = 0$

C) $-4x - 8y - 36 = 0$

D) $4x - 8y - 36 = 0$

Determine the equation of the line described. Put answer in the slope-intercept form, if possible.

18) Through (7, 7), perpendicular to $-9x - 5y = -98$

18) _____

A) $y = -\frac{5}{9}x - \frac{28}{9}$

B) $y = \frac{9}{5}x + 28$

C) $y = \frac{5}{9}x$

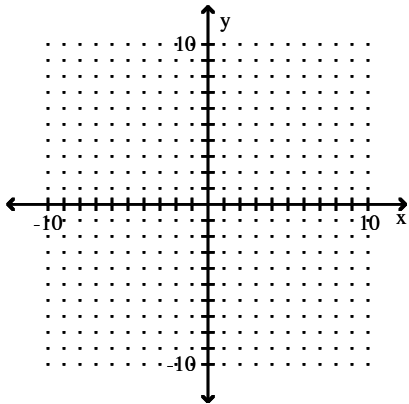
D) $y = \frac{5}{9}x + \frac{28}{9}$

Graph the piecewise-defined function.

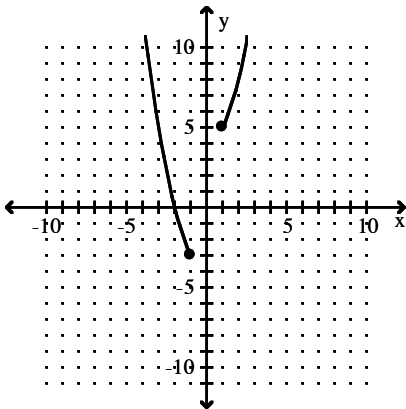
19)

19) _____

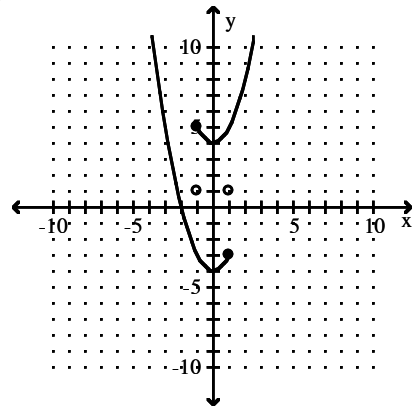
$$g(x) = \begin{cases} x^2 - 4, & \text{if } x < -1 \\ 1, & \text{if } -1 \leq x \leq 1 \\ x^2 + 4, & \text{if } x > 1 \end{cases}$$



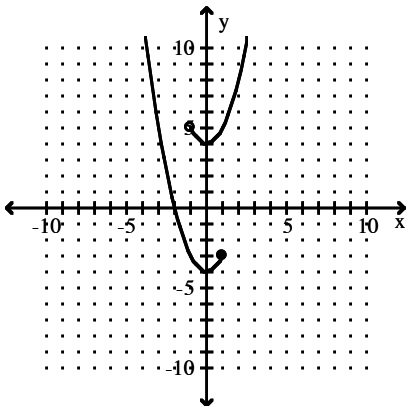
A)



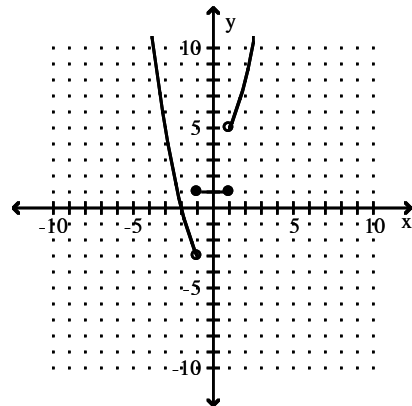
B)



C)



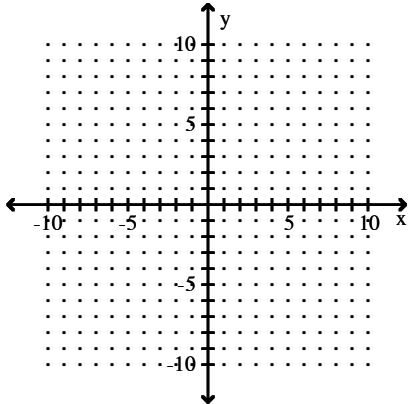
D)



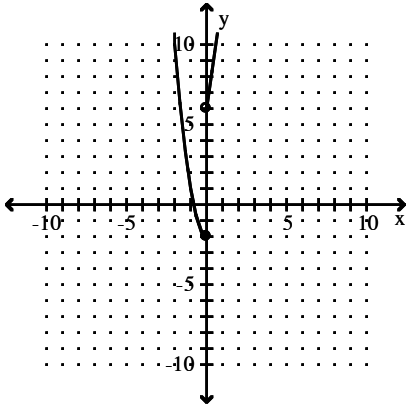
20)

20) _____

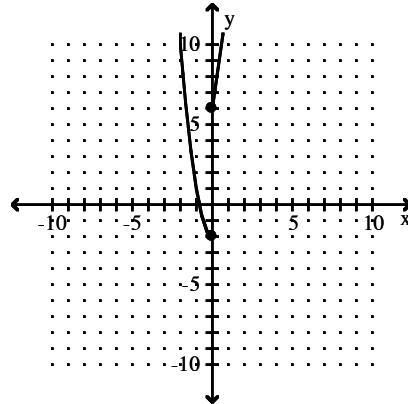
$$y(x) = \begin{cases} 7x + 6, & \text{if } x < 0 \\ 2x^2 - 2, & \text{if } x \geq 0 \end{cases}$$



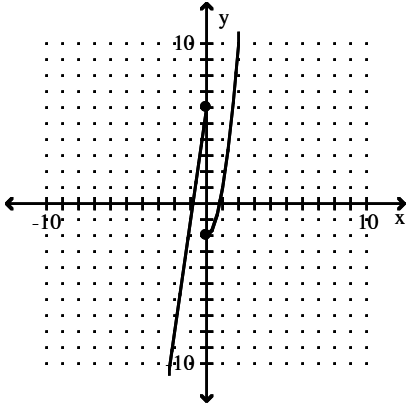
A)



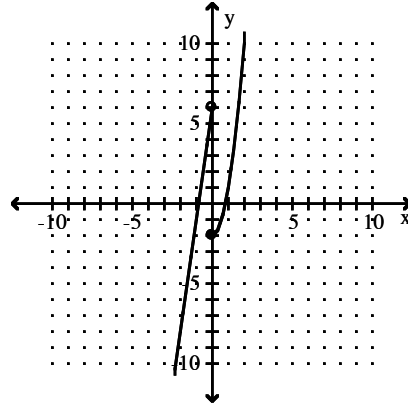
B)



C)



D)



Simplify the expression. Assume that the variables in the denominator are nonzero.

21) $\frac{x^3y^{10}}{x^8y^4}$

21) _____

A) $\frac{y^6}{x^5}$

B) $\frac{x^5}{y^5}$

C) $\frac{x^6}{y^5}$

D) $\frac{x^5}{y^6}$

22) $\frac{(3x2)^3z3}{3z7}$ 22) _____

A) $9x6z4$

B) $\frac{x6}{9z4}$

C) $\frac{x6}{z4}$

D) $\frac{9x6}{z4}$

23) $\frac{(x-3y4)^{-4}}{(y4x-5)^{-5}}$ 23) _____

A) $\frac{x8}{y4}$

B) $\frac{x13}{y4}$

C) $\frac{y4}{x8}$

D) $\frac{y4}{x13}$

24) $\left(\frac{9a8b5}{ab2}\right)\left(\frac{2b2}{3a3b7}\right)$ 24) _____

A) $\frac{1}{6a4b2}$

B) $\frac{6a4}{b2}$

C) $\frac{3a4}{b2}$

D) $6a4b2$

25) $\left(\frac{4}{xy2}\right)^{-3}$ 25) _____

A) $\frac{x3y3}{64}$

B) $\frac{x3y6}{64}$

C) $\frac{64}{x3y6}$

D) $\frac{x3y6}{4}$

Solve the inequality algebraically. Write the solution in interval notation.

26) $|6x - 2| \geq 5$ 26) _____

A) $(-\infty, -\frac{7}{6}] \cup [5, \infty)$

B) $(-\infty, -\frac{1}{2}] \cup [\frac{7}{6}, \infty)$

C) $[-\frac{1}{2}, \frac{7}{6}]$

D) $[\frac{7}{6}, \infty)$

27) $|5 + 2x| - 3 > 1$ 27) _____

A) $\left(-\infty, -\frac{1}{2}\right)$

B) $\left(-\infty, -\frac{9}{2}\right)$

C) $\left(-\infty, -\frac{9}{2}\right) \cup \left(-\frac{1}{2}, \infty\right)$

D) $\left(-\frac{9}{2}, -\frac{1}{2}\right)$

Determine the equation of the line described. Put answer in the slope-intercept form, if possible.

28) Through (2, 10) parallel to $3x + 5y = 46$ 28) _____

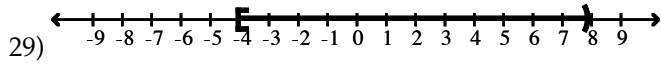
A) $y = -\frac{5}{3}x + \frac{10}{3}$

B) $y = -\frac{3}{5}x + \frac{56}{5}$

C) $y = -\frac{2}{5}x + \frac{46}{5}$

D) $y = \frac{3}{5}x - \frac{56}{5}$

Use an inequality to describe the interval of real numbers.



A) $-4 \leq x \leq 8$

B) $-4 < x < 8$

C) $-4 \leq x < 8$

D) $-4 < x \leq 8$

29) _____

30) x is between -3 and 6.

A) $-3 < x < 6$

B) $-6 < x < 3$

C) $-3 \leq x \leq 6$

D) $x \leq 6$

30) _____

Use interval notation to describe the interval of real numbers.

31) $x \leq 3$

A) $(\infty, 3)$

B) $(-\infty, 3]$

C) $[3, \infty)$

D) $(3, \infty)$

31) _____

32) x is positive.

A) $(-\infty, 0)$

B) $(-\infty, -1)$

C) $(-1, \infty)$

D) $(0, \infty)$

32) _____

Answer Key

Testname: HA2PC_CH2_A2_MCREVIEW

- 1) C
- 2) D
- 3) B
- 4) A
- 5) D
- 6) C
- 7) B
- 8) A
- 9) B
- 10) C
- 11) A
- 12) B
- 13) D
- 14) D
- 15) C
- 16) C
- 17) B
- 18) D
- 19) D
- 20) D
- 21) A
- 22) D
- 23) D
- 24) B
- 25) B
- 26) B
- 27) C
- 28) B
- 29) C
- 30) A
- 31) B
- 32) D