

Names _____

Section _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**Add or subtract terms whenever possible.**

1) $5\sqrt{20} - 5\sqrt{125} + 8\sqrt{180}$ 1) _____
 A) $33\sqrt{5}$ B) $2\sqrt{5}$ C) $5\sqrt{5}$ D) $-2\sqrt{5}$

Simplify the exponential expression.

2) $(-7x^2y)(-6x^4y^6)$ 2) _____
 A) $-42x^6y^6$ B) $42x^6y^7$ C) $42x^8y^6$ D) $-13x^6y^6$

3) $\frac{10x^8y^7}{5x^2y^3}$ 3) _____
 A) x^6y^4 B) $2x^5y^3$ C) $2x^5y^6$ D) $2x^6y^4$

Find the product.

4) $(x + 8)(4x^2 + 3x + 9)$ 4) _____
 A) $4x^3 + 35x^2 + 33x + 72$ B) $36x^3 + 27x^2 + 81x$
 C) $4x^3 + 32x^2 + 24x + 72$ D) $96x^4 + 4x^3 + 216x^2 + 72$

Factor the trinomial, or state that the trinomial is prime.

5) $5x^2 - 52x + 63$ 5) _____
 A) $(5x - 7)(5x + 9)$ B) $(5x + 9)(x - 7)$ C) $(5x - 7)(x - 9)$ D) $5(x - 7)(x - 9)$

Multiply or divide as indicated.

6) $\frac{x^2 + 12x + 32}{x^2 + 15x + 56} \div \frac{x^2 + 4x}{x^2 + 17x + 70}$ 6) _____
 A) $\frac{x + 10}{x}$ B) $x + 10$ C) $\frac{x}{x^2 + 15x + 56}$ D) $\frac{x + 10}{x^2 + 7x}$

Add or subtract as indicated.

7) $\frac{4}{x^2 - 3x + 2} + \frac{7}{x^2 - 1}$ 7) _____
 A) $\frac{11x - 10}{(x - 1)(x + 1)(x - 2)}$ B) $\frac{56x - 10}{(x - 1)(x + 1)(x - 2)}$
 C) $\frac{11x - 10}{(x - 1)(x - 2)}$ D) $\frac{10x - 11}{(x - 1)(x + 1)(x - 2)}$

Solve the equation.

8) $\frac{x + 8}{4} = \frac{9}{4} - \frac{x - 1}{5}$ 8) _____
 A) {45} B) {0} C) {1} D) {19}

Solve the equation by the square root property.

9) $4(x - 6)^2 = 20$

A) $\{1, 11\}$

B) $\{6 \pm \sqrt{5}\}$

C) $\{-11, -1\}$

D) $\{-6 \pm \sqrt{5}\}$

9) _____

Solve the polynomial equation by factoring and then using the zero product principle.

10) $5x^4 - 80x^2 = 0$

A) $\{-4, 0, 4\}$

B) $\{0\}$

C) $\{-4, 4\}$

D) $\{-4\sqrt{5}, 0, 4\sqrt{5}\}$

10) _____

Solve the radical equation, and check all proposed solutions.

11) $\sqrt{5x + 36} = x$

A) $\{9\}$

B) $\{-9\}$

C) $\{-4, 9\}$

D) \emptyset

11) _____

Solve and check the equation.

12) $(5x + 2)^{1/3} = -3$

A) $\{-16\}$

B) $\left\{-\frac{29}{5}\right\}$

C) $\left\{-\frac{27}{5}\right\}$

D) $\left\{\frac{7}{5}\right\}$

12) _____

Solve the linear inequality.

13) $-2(3x - 5) < -8x + 2$

A) $(-4, \infty)$

B) $(-\infty, -4)$

C) $(-\infty, -4]$

D) $(-\infty, -6]$

13) _____

Evaluate the function at the given value of the independent variable and simplify.

14) $f(x) = \frac{x^3 + 5}{x^2 + 7}; \quad f(2)$

A) $\frac{13}{11}$

B) $\frac{8}{11}$

C) $\frac{9}{11}$

D) $\frac{13}{4}$

14) _____

Evaluate the piecewise function at the given value of the independent variable.

15)

$$f(x) = \begin{cases} 4x - 5 & \text{if } x < 1 \\ -2x - 1 & \text{if } x \geq 1 \end{cases}$$

Determine $f(-3)$.

A) -18

B) 1

C) -12

D) -17

15) _____

Find and simplify the difference quotient $\frac{f(x+h) - f(x)}{h}$, $h \neq 0$ for the given function.

16) $f(x) = x^2 + 2x + 4$

A) $2x + h + 4$

B) 1

C) $\frac{2x^2 + 2x + 2xh + h^2 + h + 8}{h}$

D) $2x + h + 2$

16) _____

Use the given conditions to write an equation for the line in point-slope form.

17) Passing through $(-7, -5)$ and $(-3, -4)$

A) $y + 5 = \frac{1}{4}(x + 3)$ or $y + 4 = \frac{1}{4}(x + 7)$

B) $y + 5 = \frac{1}{4}(x + 7)$ or $y + 4 = \frac{1}{4}(x + 3)$

C) $y - 5 = \frac{1}{4}(x - 7)$ or $y - 4 = \frac{1}{4}(x - 3)$

D) $y + 5 = \frac{1}{4}x - 7$ or $y + 4 = \frac{1}{4}x + 5$

17) _____

Find the domain of the function.

18) $f(x) = \sqrt{25 - x}$

A) $(-\infty, 25) \cup (25, \infty)$

B) $(-\infty, 5) \cup (5, \infty)$

C) $(-\infty, 25]$

D) $(-\infty, 5]$

18) _____

Find the domain of the function.

19) $f(x) = \frac{5x}{x + 7}$

A) $(-\infty, \infty)$

B) $(-\infty, 0) \cup (0, \infty)$

C) $(-\infty, -7) \cup (-7, \infty)$

D) $(-\infty, -7)$

19) _____

Given functions f and g , perform the indicated operations.

20) $f(x) = 5x - 3$, $g(x) = 8x - 9$

Find $f - g$.

A) $3x - 6$

B) $13x - 12$

C) $-3x - 12$

D) $-3x + 6$

20) _____

For the given functions f and g , find the indicated composition.

21) $f(x) = 7x + 8$, $g(x) = 4x - 1$

$(f \circ g)(x)$

A) $28x + 1$

B) $28x + 15$

C) $28x + 31$

D) $28x + 7$

21) _____

22) $f(x) = 17x^2 - 6x$, $g(x) = 8x - 5$

$(f \circ g)(8)$

A) 61,360

B) 50,508

C) 58,823

D) 8315

22) _____

Use the given conditions to write an equation for the line in the indicated form.

23) Passing through $(3, 5)$ and parallel to the line whose equation is $y = 2x - 6$; point-slope form

A) $y = 2x$

B) $y - 5 = x - 3$

C) $y - 5 = 2(x - 3)$

D) $y - 3 = 2(x - 5)$

23) _____

Solve the absolute value equation or indicate that the equation has no solution.

24) $|x - 7| = 2$

A) $\{5, 9\}$

B) $\{9\}$

C) $\{-9, -5\}$

D) \emptyset

24) _____

Divide and express the result in standard form.

25) $\frac{5 - 4i}{4 + 5i}$

A) $-i$

B) 1

C) -1

D) i

25) _____

Find the product and write the result in standard form.

26) $(9 - 2i)(-3 - 2i)$

A) $-31 - 24i$

B) $-23 - 24i$

C) $-31 - 12i$

D) $-23 - 12i$

26) _____

Use the given conditions to write an equation for the line in the indicated form.

27) Passing through $(3, 3)$ and perpendicular to the line whose equation is $y = 2x + 7$;

point-slope form

A) $y - 3 = \frac{1}{2}(x - 3)$

B) $y - 3 = -\frac{1}{2}(x - 3)$

C) $y - 3 = \frac{1}{2}(x + 3)$

D) $y = -2x - 9$

27) _____

Solve the equation by completing the square.

28) $x^2 + 4x = 3$

A) $\{-2 - \sqrt{3.5}, -2 + \sqrt{3.5}\}$

B) $\{2 + \sqrt{3.5}\}$

C) $\{-2 - 1\sqrt{3.5}, -2 + 1\sqrt{3.5}\}$

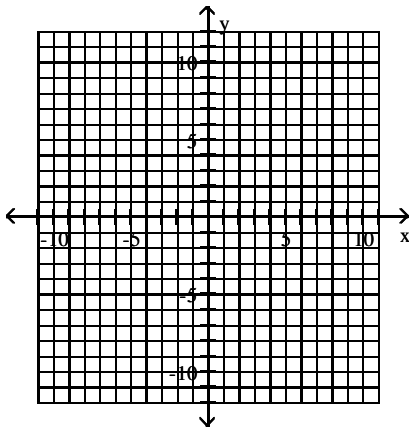
D) $\{-1 - \sqrt{3.5}, -1 + \sqrt{3.5}\}$

28) _____

Use the vertex and intercepts to sketch the graph of the quadratic function.

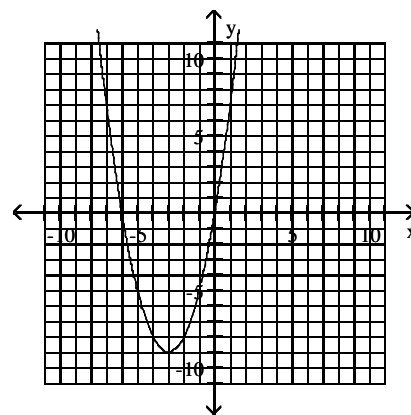
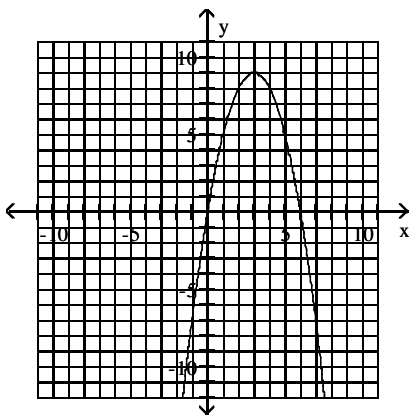
29) $f(x) = 9 - (x + 3)^2$

29) _____

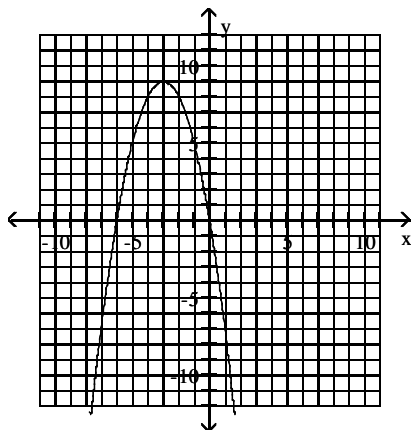


A)

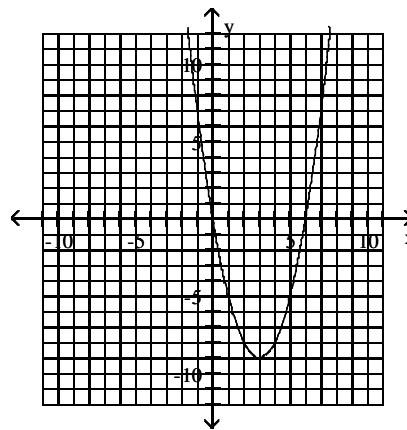
B)



C)



D)



Find the distance between the pair of points.

30) $(7, -1)$ and $(3, -3)$

A) $12\sqrt{3}$

B) 12

C) $2\sqrt{5}$

D) 2

30) _____

Find the midpoint of the line segment whose end points are given.

31) $(-\frac{7}{2}, \frac{3}{2})$ and $(2, -\frac{5}{4})$

A) $(\frac{11}{4}, -\frac{11}{8})$

B) $(-\frac{3}{2}, \frac{1}{4})$

C) $(-\frac{3}{4}, \frac{1}{8})$

D) $(-\frac{11}{4}, \frac{11}{8})$

31) _____

Write the standard form of the equation of the circle with the given center and radius.

32) $(-4, 4)$; 3

A) $(x + 4)^2 + (y - 4)^2 = 3$

B) $(x - 4)^2 + (y + 4)^2 = 3$

C) $(x + 4)^2 + (y - 4)^2 = 9$

D) $(x - 4)^2 + (y + 4)^2 = 9$

32) _____

Simplify the exponential expression.

33) $\frac{30x^{13}y^{10}}{5x^{12}y^{-7}}$

A) $6xy^3$

B) $30xy^{17}$

C) $6x^{25}y^{17}$

D) $6xy^{17}$

33) _____

Factor by grouping. Assume any variable exponents represent whole numbers.

34) $5x^3 + 20x^2 + 9x + 36$

A) $(x - 4)(5x^2 + 9)$

B) $(x + 4)(5x^2 + 9)$

C) $(x + 4)(5x + 9)$

D) $(x + 4)(5x^2 - 9)$

34) _____

Simplify the exponential expression.

35) $(-8x^8y^5)^2$

A) $64x^{10}y^7$

B) $-8x^{16}y^{10}$

C) $64x^{16}y^{10}$

D) $-64x^{16}y^{10}$

35) _____

Factor the trinomial, or state that the trinomial is prime.

36) $x^2 + 16x + 63$

A) $(x - 7)(x + 1)$

B) $(x + 7)(x + 9)$

C) $(x - 7)(x + 9)$

D) prime

36) _____

Factor the difference of two squares.

37) $x^4 - 1$

A) $(x^2 - 1)(x^2 - 1)$

C) $(x^2 + 1)(x^2 + 1)$

B) $(x^2 + 1)(x + 1)(x - 1)$

D) prime

37) _____

Use the five-step strategy for solving word problems to find the number or numbers described in the following exercise.

38) When a number is decreased by 30% of itself, the result is 42. What is the number?

A) 50

B) 60

C) 200

D) 18

38) _____

Factor using the formula for the sum or difference of two cubes.

39) $x^3 - 125$

A) $(x + 125)(x^2 - 1)$

C) $(x - 5)(x^2 + 5x + 25)$

B) $(x + 5)(x^2 - 5x + 25)$

D) prime

39) _____

Find the union of the two sets.

40) $\{1, 11\} \cup \{1, 5, 9\}$

A) $\{1\}$

B) \emptyset

C) $\{1, 5, 9, 11\}$

D) $\{5, 9, 11\}$

40) _____

Find the slope of the line that goes through the given points.

41) $(\frac{2}{3}, -5)$ and $(\frac{2}{3}, -4)$

A) $-\frac{9}{4}$

B) 4

C) $\frac{1}{4}$

D) Undefined

41) _____

For the given functions f and g, find the indicated composition.

42) $f(x) = x^2 - 2x - 1$, $g(x) = x^2 - 2x - 5$

$(f \circ g)(5)$

A) 79

B) 175

C) 167

D) 71

42) _____

Find the product and write the result in standard form.

43) $(4 + 7i)(4 - 7i)$

A) 65

B) -33

C) $16 - 49i^2$

D) $16 - 49i$

43) _____

Solve the equation by completing the square.

44) $x^2 + 4x = 9$

A) $\{-1 - \sqrt{6.5}, -1 + \sqrt{6.5}\}$

C) $\{-2 - \sqrt{6.5}, -2 + \sqrt{6.5}\}$

B) $\{-2 - 1\sqrt{6.5}, -2 + 1\sqrt{6.5}\}$

D) $\{2 + \sqrt{6.5}\}$

44) _____

Find the range of the quadratic function.

45) $f(x) = 9 - (x + 3)^2$

A) $[-3, \infty)$

B) $(-\infty, 3]$

C) $(-\infty, 9]$

D) $[9, \infty)$

45) _____

Answer Key

Testname: FINALS REVIEW FALL 2010

- 1) A
- 2) B
- 3) D
- 4) A
- 5) C
- 6) A
- 7) A
- 8) C
- 9) B
- 10) A
- 11) A
- 12) B
- 13) B
- 14) A
- 15) D
- 16) D
- 17) B
- 18) C
- 19) C
- 20) D
- 21) A
- 22) C
- 23) C
- 24) A
- 25) A
- 26) C
- 27) B
- 28) A
- 29) C
- 30) C
- 31) C
- 32) C
- 33) D
- 34) B
- 35) C
- 36) B
- 37) B
- 38) B
- 39) C
- 40) C
- 41) D
- 42) A
- 43) A
- 44) C
- 45) C