

Tests from past semesters are provided as a study preparation tool. As tests are created by different instructors, problems on current tests may differ. Sample tests are a good beginning point in your test preparation but it is recommended that you don't use sample tests as your only study resource. KEY MAY BE FOUND ON THE LAST TWO PAGES.

Math 90 Final – Fall 2009

Please print all of the following information clearly. This will ensure that you receive credit for your work.

Student:

_____ **Last Name**

_____ **First Name**

_____ **Middle Name**

Student ID# : G _____

Regular class meeting

Instructor's Name: _____ **CRN:** _____

Days: Mon. Tue. Wed. Thu. Fri. Sat. **Time:** _____
(circle all days that your class meets) (write in time of day)

ATTENTION

- You need to show all of your work
- Write neatly and clearly
- Partial credit will be given

Do not write below this line

.....

Question Score

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Total: _____

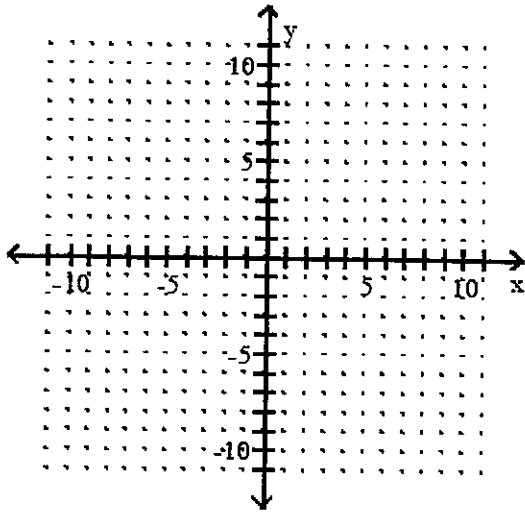
Score

Multiple Choice	
Free Response	
Total	

Show all work, step by step.

As appropriate write the formula that you are using for each problem.

1. Find the x-intercept, find the y-intercept, and graph the equation: $5x + 6y = 30$.



x-intercept: _____

y-intercept: _____

2. Solve the system of equation:

$$-6x + 4y = -28$$

$$-3x - 2y = -22$$

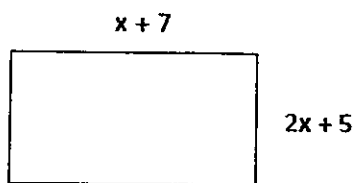
2. _____

3. Factor by grouping: $x^3 + 6x^2 + 4x + 24$

3. _____

4. The area rectangle shown is 56 in^2 . Find the length and the width of the rectangle.

4. _____



5. Solve the equation: $\frac{x}{2x+2} = \frac{-2x}{4x+4} + \frac{2x-3}{x+1}$

5. _____

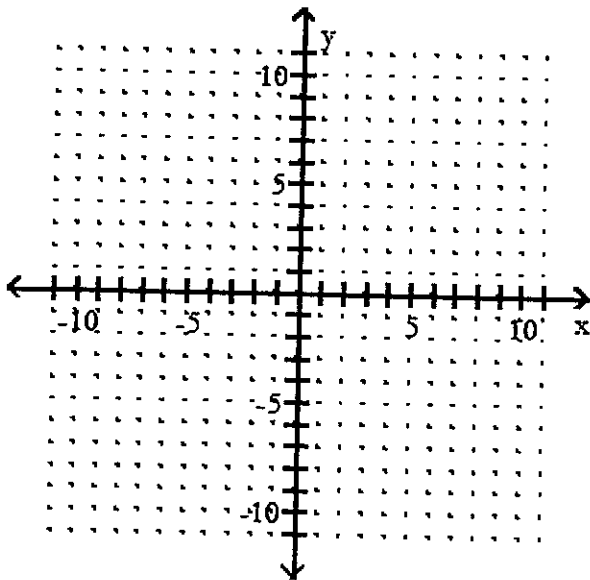
6. Solve the equation: $\sqrt{x+7} + 5 = x$

6. _____

7. Solve the equation: $5x^2 + 8x = -1$

7. _____

8. Sketch the graph of the parabola by clearly showing the vertex and the x and y-intercepts if any: $y = (x + 2)^2 - 5$



9. A projectile is thrown upward so that its distance (in feet) above the ground after t seconds is given by: $h(t) = -12t^2 + 456t$.

What is the maximum height?

9. _____

10. Solve: $\log_x 9 = \frac{1}{2}$

10. _____

For this multiple choice part of the test, answer on the scantron

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Use the order of operations to simplify the expression.

$$1) \frac{-5(-7) - (5)5^3}{-9 - \sqrt{25} + 6}$$

A) $\frac{7795}{4}$

B) $\frac{295}{4}$

C) $-\frac{1875}{2}$

D) $-\frac{1875}{4}$

Solve the formula for the specified variable.

$$2) F = \frac{9}{5}C + 32 \text{ for } C$$

A) $C = \frac{5}{9}(F - 32)$

B) $C = \frac{5}{F - 32}$

C) $C = \frac{F - 32}{9}$

D) $C = \frac{9}{5}(F - 32)$

Solve the equation.

$$3) |4m + 5| = 6$$

A) \emptyset

B) $\left\{\frac{1}{5}, -\frac{11}{5}\right\}$

C) $\left\{\frac{1}{4}, -\frac{11}{4}\right\}$

D) $\left\{-\frac{1}{4}, \frac{11}{4}\right\}$

Solve the problem.

$$4) \text{ Find } f(-1) \text{ when } f(x) = 3x^2 + 5x + 6.$$

A) -8

B) 14

C) 2

D) 4

$$5) \text{ Find } g(a - 1) \text{ when } g(x) = \frac{1}{5}x + 2.$$

A) $\frac{1}{5}a + 2$

B) $\frac{a - 9}{5}$

C) $\frac{a + 9}{5}$

D) $\frac{1}{5}a - 5$

Find an equation of the line passing through the two points. Write the equation in standard form.

$$6) (-2, -6) \text{ and } (-7, 0)$$

A) $4x - 7y = 28$

B) $6x + 5y = -42$

C) $-4x + 7y = 28$

D) $-6x + 5y = -42$

Find an equation of the line satisfying the conditions. Write the equation in slope-intercept form.

$$7) \text{ Through } (-3, 8); \text{ perpendicular to } -3x + 4y = -23$$

A) $y = \frac{3}{4}x + \frac{41}{4}$

B) $y = -\frac{3}{4}x + \frac{23}{4}$

C) $y = \frac{4}{3}x + 12$

D) $y = -\frac{4}{3}x + 4$

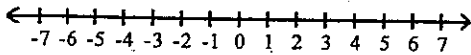
Solve the problem.

8) A cabin cruiser travels 20 miles in the same time that a power boat travels 40 miles. The cruiser travels 5 mph slower than the power boat. Find the speed of each boat.

- A) Power boat: 10 mph; cabin cruiser: 5 mph
- B) Power boat: 20 mph; cabin cruiser: 15 mph
- C) Power boat: 15 mph; cabin cruiser: 10 mph
- D) Cannot be determined without more information

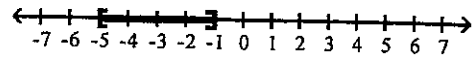
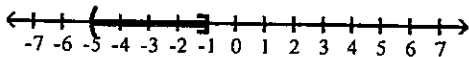
Solve the inequality. Give the solution set in both interval and graph forms.

9) $-21 < 5a + 4 \leq -1$



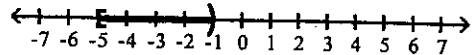
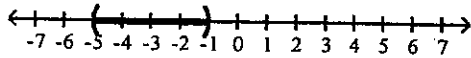
A) $(-5, -1]$

B) $[-5, -1]$



C) $(-5, -1)$

D) $[-5, -1)$



Find the domain of the rational function.

10) $f(x) = \frac{x-1}{7x+8}$

A) $\left\{x \mid x \neq -\frac{8}{7}, 1\right\}$

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

C) $\left\{x \mid x \neq \frac{8}{7}\right\}$

D) $\left\{x \mid x \neq -\frac{8}{7}\right\}$

Add or subtract as indicated. Write the answer in lowest terms.

11) $\frac{x}{x^2-16} - \frac{4}{x^2+5x+4}$

A) $\frac{x^2-3x+16}{(x-4)(x+4)}$

B) $\frac{x^2-3}{(x-4)(x+4)(x+1)}$

C) $\frac{x^2-3x+16}{(x-4)(x+4)(x+1)}$

D) $\frac{x^2+3x+16}{(x-4)(x+4)(x+1)}$

Perform the indicated operation and express in lowest terms.

12) $\frac{k^2+10k+16}{k^2+13k+40} \cdot \frac{k^2+5k}{k^2-2k-8}$

A) $\frac{1}{k-4}$

B) $\frac{k}{k-4}$

C) $\frac{k}{k^2+13k+40}$

D) $\frac{k^2+5k}{k-4}$

Solve the equation.

13) $\frac{2y+3}{y} = \frac{3}{2}$

A) $\{3\}$

B) $\{-6\}$

C) $\{0\}$

D) $\{6\}$

Simplify the expression involving rational exponents.

14) $\left(\frac{25}{36}\right)^{-1/2}$

A) $\frac{5}{6}$

B) Not a real number

C) $\frac{6}{5}$

D) $\frac{25}{72}$

Multiply, then simplify the product. Assume that all variables represent positive real numbers.

15) $(2 - 5\sqrt{3})^2$

A) $4 - 25\sqrt{3}$

B) $4 + 25\sqrt{3}$

C) $79 - 20\sqrt{3}$

D) $79 + 20\sqrt{3}$

Identify the vertex of the given parabola.

16) $f(x) = -(x + 1)^2 - 2$

A) $(-1, -2)$

B) $(1, -2)$

C) $(1, 2)$

D) $(-1, 2)$

Solve the equation.

17) $x^4 - 8x^2 - 9 = 0$

A) $\{3, -3, 1, -1\}$

B) $\{3, -3, i, -i\}$

C) $\{3i, -3i, i, -i\}$

D) $\{1, -1, 3i, -3i\}$

18) $2^x = \frac{1}{8}$

A) $\left\{\frac{1}{4}\right\}$

B) $\{-3\}$

C) $\left\{\frac{1}{3}\right\}$

D) $\{3\}$

Write in logarithmic form.

19) $6^3 = 216$

A) $\log_{216} 6 = 3$

B) $\log_6 3 = 216$

C) $\log_3 216 = 6$

D) $\log_6 216 = 3$

Rewrite the given expression as a single logarithm. Assume that all variables are defined in such a way that variable expressions are positive and bases are positive numbers not equal to 1.

20) $(\log_m m - \log_m n) + 6 \log_m k$

A) $\log_m \frac{m}{k^6 n}$

B) $\log_m \frac{6mk}{n}$

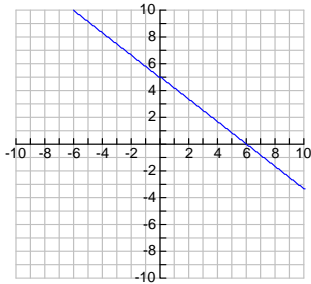
C) $\log_m \frac{mk^6}{n}$

D) $\log_m mk^6 n$

SOLUTIONS FINAL EXAM FALL 2009

FREE RESPONSE PART

1) y-intercept (0,5) x-intercept (6,0)



2) (6,2)

3) $(x^2 + 4)(x + 6)$

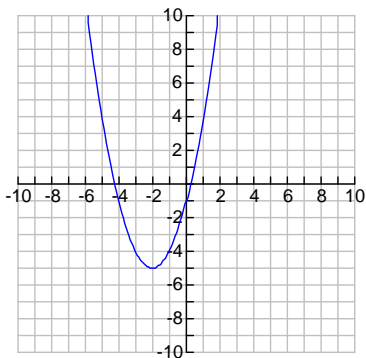
4) width 7 in, length 8 in

5) $x=3$

6) $x=9$

7) $\left\{ \frac{-4-\sqrt{11}}{5}, \frac{-4+\sqrt{11}}{5} \right\}$

8) Vertex $(-2,-5)$ Zeros $\{-2-\sqrt{5}, -2+\sqrt{5}\}$



9) 4332 ft.

10) 81

MULTIPLE CHOICE

1. B

2. A

3. C

4. D

5. C

6. B

7. D

8. A

9. A

10. D

11. C

12. B

13. B

14. C

15. C

16. A

17. B

18. B

19. D

20. C