

Math 150 Test #5B Print this test. When you have completed this test submit your answers in Test #5B Answers. Remember that work must be shown on questions that are not multiple choice (Part II).

Part I: Select the letter of the correct answer.

1.) Solve the following system of equations simultaneously **for x**.

$$2x + 3y = 6 \text{ and } 4x - 5y = 2 \quad x =$$

A) $\frac{4}{11}$ B) $\frac{11}{10}$ C) $\frac{10}{11}$ D) $\frac{18}{11}$

2.) Solve the following system of equations simultaneously **for y**.

$$x = 5y - 2 \text{ and } 3x + 2y = 7 \quad y =$$

A) $\frac{13}{17}$ B) $\frac{17}{13}$ C) $\frac{31}{17}$ D) $\frac{1}{17}$

3.) Solve for x: $3x^2 - 4x = 3x + 6$; x =

A) $\frac{1 \pm \sqrt{73}}{2}$ B) $-\frac{2}{3} \text{ & } 3$ C) $\frac{7 \pm i\sqrt{23}}{6}$ D) $\frac{2}{3} \text{ & } 3$

4.) Solve the following quadratic equation using the quadratic formula. **Express your answer in simplest radical form.** $2x^2 - 4x + 1 = 0$; x =

A) $2\sqrt{2}$ B) $\sqrt{2}$ C) $\frac{2 \pm \sqrt{6}}{2}$ D) $\frac{2 \pm \sqrt{2}}{2}$

For questions #5 – 8 use the following: $y = x^2 + 4x - 5$

5.) Where does the graph of this function cross the x-axis? x =

A) -5 B) -5 & -1 C) -5 & 1 D) 5 & -1

6.) Find the equation for the axis of symmetry. (**Use $y = x^2 + 4x - 5$**)

A) x = -2 B) x = 2 C) x = -5/2 D) x = 4

7.) Find the coordinates of the vertex. (**Use $y = x^2 + 4x - 5$**)

A) (2, 7) B) (-2, -9) C) (4, -5) D) (4, 27)

$$y = x^2 + 4x - 5$$

8.) Is the extreme point (vertex) a maximum or a minimum point? Explain.
Pick the **ONE** answer below that is completely correct. (Read these carefully.)
The vertex is _____

A) a **maximum** point since the curve is concave-upward.
B) a **maximum** point since the curve is concave-downward.
C) a **minimum** point since the curve is concave-downward.
D) a **minimum** point since the curve is concave-upward.

9.) Simplify i^{18} where $i = \sqrt{-1}$

A) $-i$ B) i C) 1 D) -1

10.) Combine: $(8 - 4i) - (2 - 3i) - (-5 + i)$

A) $11 - 2i$ B) $9i$ C) 12 D) $11 - 8i$

11.) **Multiply** $(4 + 3i)$ by its conjugate and simplify.

A) $-4 - 3i$ B) $7 + 24i$ C) 7 D) 25

12.) Solve the following quadratic equation. Simplify your answer.
 $x^2 - 4x + 5 = 0$; $x =$

A) $2 \pm 2i\sqrt{2}$ B) $2 \pm \sqrt{15}$ C) $2 \pm i$ D) $-2 \pm 2i$

Part II: Show all of your work using the methods used in the lectures. To receive credit you must type out your work.

13.) Solve by completing the square. Show all steps. Leave your answer in simplest radical form. $2x^2 - 12x + 2 = 0$

14.) Divide and simplify: $\frac{3}{2 - 3i}$ (Do not write your answer in decimal form.
Keep the fractions.)

15.) Solve the following radical equation for x. Remember to show the check.

$$\sqrt{16 - 4x} + 1 = x$$

16.) Reduce the following system of three equations to a system of two equations in two unknowns **by eliminating y**. Show all of your work. **Your answer will be two equations, neither of which contains a y**. Type out your work using the methods used in class (in the lectures). You are not solving for x, y and z.

a) $2x + y - 3z = -4$
b) $3x - 2y + z = 19$
c) $x + 3y + 2z = -5$

17.) Solve the following word problem using two variables and a system of two equations.. You must use an algebraic solution **and show your equations** to receive credit. The cost of 3 hamburgers and 2 sodas is \$14.90. The cost of one hamburger is 30 cents more than the cost of two sodas. Find the cost of one hamburger. (Let x = the cost of one hamburger and y = cost of one soda.)