ALGEBRA COMPETENCY EXAM
Spring 2011

Part II: Multiple Choice, Calculators Permitted, 35 minutes

Name (please print):_____Date:_____
First Name Last Name

Use any methods you like to solve the following problems. Use the Scantron form to bubble in your answers. You are allowed to write on this test but only the Scantron answers will be graded. Each question is worth 2 points.

1) Simplify: $3(x^4)^2 (2x^3)^4$ 1) _____

A) $6x^{13}$ B) $24x^{20}$ C) $144x^{13}$ D) $48x^{20}$

2) What are the solutions to the equation $x(3x - 7)(x + 8) = 0$? 2) _____

A) $x = 0$ or $x = 7$ or $x = -8$ B) $x = \frac{7}{3}$ or $x = -8$

C) $x = 0$ or $x = -8$ or $x = \frac{7}{3}$ D) $x = 0$ or $x = 8$ or $x = -\frac{7}{3}$

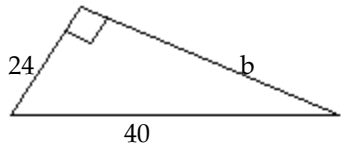
3) Exponential growth can be modeled by the equation $A = P(1 + r)^t$. 3) _____
If you deposit \$450.00 in an account that pays 6% interest compounded yearly, what is the account balance after 8 years?

A) \$498.00 B) \$638.33 C) \$717.23 D) \$19,327.35

4) Solve for x: $\sqrt{5x - 2} + 4 = 10$ 4) _____

A) $\frac{88}{5}$ B) $\frac{38}{5}$ C) $\frac{64}{5}$ D) $\frac{98}{5}$

5) Find the missing length. Give an exact answer. 5)



A) $b = 32$ B) $b = 16$ C) $b \approx 46.65$ D) $b = 64$

6) The volume of a cylinder is given by the formula $A = \pi r^2 h$. Solve this formula for r. 6) _____

A) $\frac{\sqrt{A}}{\pi h}$ B) $\left(\frac{A}{\pi h}\right)^2$ C) $\frac{A}{2\pi h}$ D) $\sqrt{\frac{A}{\pi h}}$

7) Consider two lines described by the equations $3x + 2y = 5$ and $2x + 3y = 4$. Which of the following statements best describes the two lines? 7) _____

A) The lines are perpendicular.

B) The lines are neither parallel nor perpendicular.

C) The lines have the same y–intercept.

D) The lines are parallel.

8) Solve the absolute value equation: $|x + 7| = 35$ 8) _____

A) –42, 28 B) –28, 42 C) 28, 42 D) –28, 28

9) Expand and simplify: $(5x - 6)^2$ 9) _____

A) $25x^2 - 36$ B) $25x^2 + 36$

C) $25x^2 - 60x + 36$ D) $10x^2 - 12$

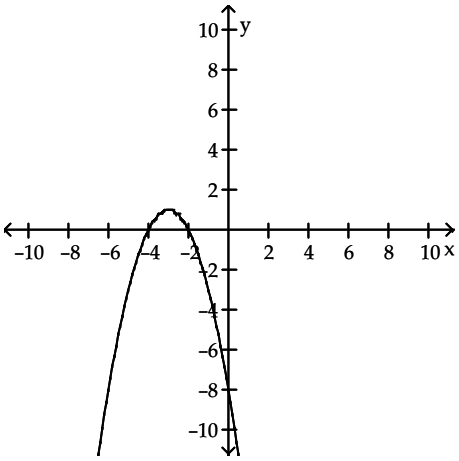
10) Which of the following equations does **NOT** have the same solution as the other three? 10) _____

A) $7y - (y + 3) = 4y + 1$ B) $7y + 1 = 5y - 1$

C) $\frac{3}{4}y + 1 = \frac{1}{2}y + \frac{3}{2}$ D) $5y - 3 = 2y + 3$

11) Graph: $y = -x^2 - 6x - 8$ 11) _____

A)



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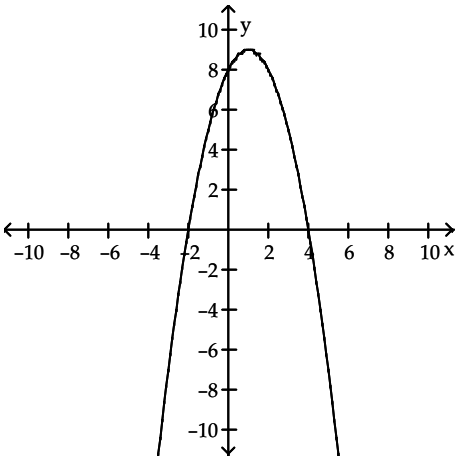

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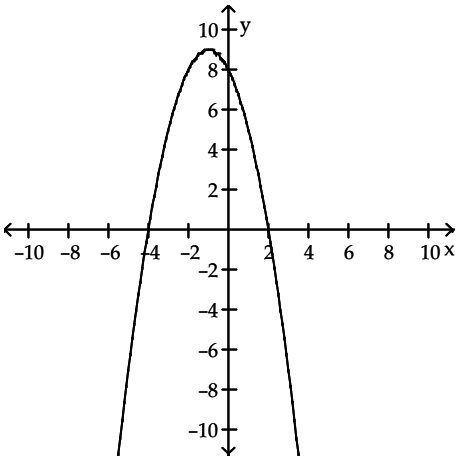

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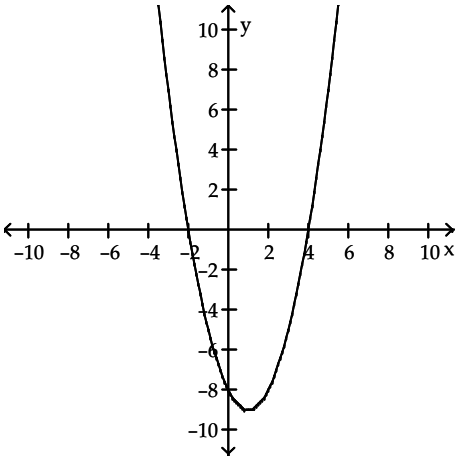
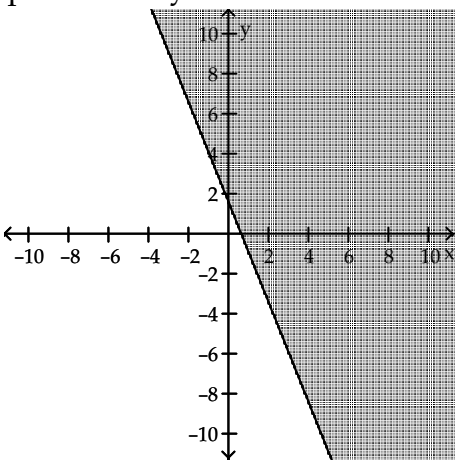


12) Which set of ordered pairs is **NOT** a function? 12) _____

A) {(–7, –6), (7, –6), (9, –5), (–9, –5)}
B) {(9, –5), (–9, –6), (7, 6), (–7, 6)}
C) {(6, –6), (–6, –6), (7, 6), (–7, 6)}
D) {(7, –6), (9, 5), (–9, –5), (7, 6)}

13) Graph: $5x + 2y \geq 3$ 13) _____

A)



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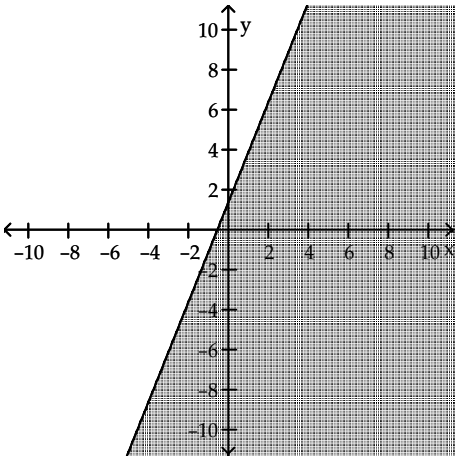

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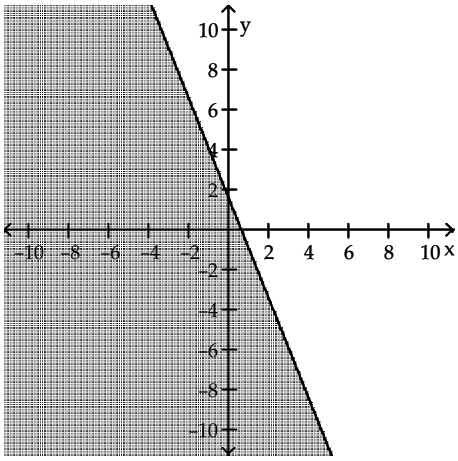

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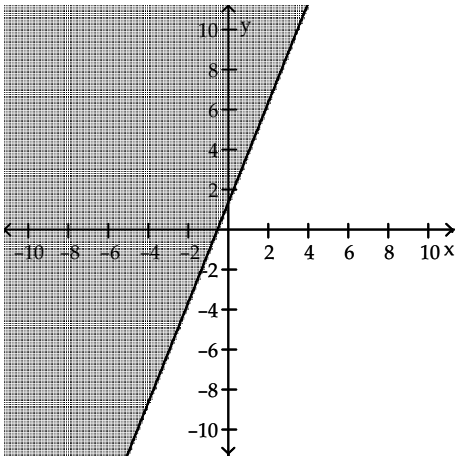
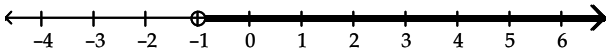


14) The solution to which inequality is graphed on the number line below? 14) _____



A) $-5x + 7 > 2$ B) $-5x - 7 < 2$ C) $5x - 7 > 2$ D) $5x + 7 > 2$

15) What is the mean, median, and mode of the data listed below? 15) _____

20, 8, 8, 11, 10, 9, 5, 8, 10, 12, 7, 13, 9

A) mean = 10, median = 9, mode = 8 B) mean = 10, median = 5, mode = 9
C) mean = 9, median = 8, mode = 10 D) mean = 9, median = 10, mode = 8