

Student: _____
Date: _____
Time: _____

Instructor: MALGORZATA
SUROWIEC
Course: Spring 2012, 11400, Section
10114
Date: _____

Assignment: Test # 1-A

1. Perform the indicated operations. Write the resulting polynomial in standard form.

$$(2x^5 + 19x^4 - 8) - (5x^5 - 7x^4 - 14)$$

- ☐ A. $-3x^5 + 26x^4 + 6$
☐ B. $-3x^5 + 26x^4 - 22$
☐ C. $29x^9$
☐ D. $-3x^5 + 24x^4 - 22$

2. Find the product.

$$(x - 12)(x^2 + 2x - 8)$$

- ☐ A. $x^3 + 14x^2 + 16x - 96$
☐ B. $x^3 - 10x^2 - 16x - 96$
☐ C. $x^3 + 14x^2 + 32x + 96$
☐ D. $x^3 - 10x^2 - 32x + 96$

3. Find the product.

$$(3x - 8)^2$$

- ☐ A. $3x^2 + 64$
☐ B. $3x^2 - 48x + 64$
☐ C. $9x^2 - 48x + 64$
☐ D. $9x^2 + 64$

4. Factor out the greatest common factor.

$$18x^4 - 4x^3 + 10x^2$$

- ☐ A. $2x^2(9x^2 - 2x + 5)$
☐ B. $2(9x^4 - 2x^3 + 5x^2)$
☐ C. $x^2(18x^2 - 4x + 10)$
☐ D. $2x(9x^3 - 2x^2 + 5x)$

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5. Factor the following expression by grouping.

$$x^3 - 4x^2 - 3x + 12$$

- ☐ A. $(x - 3)(x^2 - 4)$
☐ B. $(x + 4)(x^2 + 3)$
☐ C. $(x - 4)(x - 3)$
☐ D. $(x - 4)(x^2 - 3)$

6. Find all numbers that must be excluded from the domain of the rational expression.

$$\frac{x - 5}{x^2 - 25}$$

- ☐ A. $x \neq 5, x \neq -5$
☐ B. $x \neq \frac{1}{5}$
☐ C. $x \neq 25$
☐ D. $x \neq 5$

7. Solve for the variable x in the equation shown below.

$$(7x + 3) - 5 = 8(x + 2)$$

- ☐ A. $\{8\}$
☐ B. $\{4\}$
☐ C. $\{18\}$
☐ D. $\{-18\}$

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8. Solve for the variable x in the equation shown below.

$$\frac{2x}{5} = \frac{x}{3} + 4$$

- ☐ A. $\{120\}$
☐ B. $\{60\}$
☐ C. $\{-120\}$
☐ D. $\{-60\}$

9. First, write the value(s) that make the denominator(s) zero. Then solve the equation.

$$\frac{21}{7x-7} + \frac{1}{7} = \frac{3}{x-1}$$

- ☐ A. $x \neq 1; \emptyset$
☐ B. $x \neq 1; \{1\}$
☐ C. $x \neq -1, 7; \{1, 7\}$
☐ D. $x \neq 7; \{1\}$

10. Find all values of x satisfying the given conditions.

$$f(x) = \frac{1}{x+4}, g(x) = \frac{2}{x+3}, h(x) = \frac{-1}{x^2+7x+12}, \text{ and } f(x) + g(x) = h(x)$$

- ☐ A. $\{-4\}$
☐ B. $\{0\}$
☐ C. \emptyset
☐ D. $\{3\}$

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

When 70% of a number is added to the number, the result is 17. What is the number?

- ☐ A. 170
☐ B. 7
☐ C. 10
☐ D. 41

12. You inherit \$42,000 from a very wealthy grandparent, with the stipulation that for the first year, the money must be invested in two stocks paying 4% and 10% annual interest, respectively. How much should be invested at each rate if the total interest earned for the year is to be \$2,400?

- ☐ A. \$30,000 invested at 4%; \$12,000 invested at 10%
☐ B. \$20,000 invested at 4%; \$22,000 invested at 10%
☐ C. \$12,000 invested at 4%; \$30,000 invested at 10%
☐ D. \$22,000 invested at 4%; \$20,000 invested at 10%

13. The length of a rectangular room is 3 feet longer than twice the width. If the room's perimeter is 162 feet, what are the room's dimensions?

- ☐ A. Width = 31 ft; length = 65 ft
☐ B. Width = 26 ft; length = 55 ft
☐ C. Width = 39 ft; length = 42 ft
☐ D. Width = 52 ft; length = 110 ft

14. Perform the subtractions and write the expression shown below in standard form.

$$2 - (-6 + 2i) - (-5 + 4i)$$

- ☐ A. $13 - 6i$
☐ B. $13 + 6i$
☐ C. $11 + 6i$
☐ D. $11 - 6i$

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EC-141
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15. Divide and express the result in standard form.

$$\frac{9}{9-i}$$

- ☐ A. $\frac{81}{80} + \frac{9}{80}i$
☐ B. $\frac{81}{82} - \frac{9}{82}i$
☐ C. $\frac{81}{82} + \frac{9}{82}i$
☐ D. $\frac{81}{80} - \frac{9}{80}i$

16. Perform the indicated operations and write the result in standard form.

$$(\sqrt{-9})(\sqrt{-36})$$

- ☐ A. $-18i$
☐ B. 18
☐ C. -18
☐ D. $-18i^2$

17. Solve the equation by the square root property.

$$(x-4)^2 = 36$$

- ☐ A. $\{-6, 6\}$
☐ B. $\{-2, 10\}$
☐ C. $\{-10, -2\}$
☐ D. $\{40\}$

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18. Solve the equation using the quadratic formula.

$$x^2 + 6x - 16 = 0$$

- ☐ A. $\{-8, 2\}$
☐ B. $\{8, 2\}$
☐ C. $\{-8, 1\}$
☐ D. $\{-2, 8\}$

19. Compute the discriminant. Then determine the number and type of solutions for the given equation.

$$x^2 - 6x + 8 = 0$$

- ☐ A. 0; one real solution
☐ B. -68; two complex imaginary solutions
☐ C. 4; two unequal real solutions

20. Solve the radical equation, and check all proposed solutions.

$$\sqrt{14x - 20} = x + 2$$

- ☐ A. \emptyset
☐ B. $\{4, 6\}$
☐ C. $\{4\}$
☐ D. $\{6\}$

21. Solve the equation by making an appropriate substitution.

$$(x + 6)^2 - 6(x + 6) + 8 = 0$$

- ☐ A. $\{-10, -8\}$
☐ B. $\{8, 10\}$
☐ C. $\{-4, -2\}$
☐ D. $\{2, 4\}$

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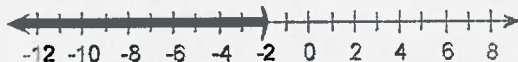
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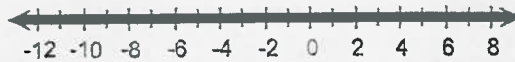
22. Solve the linear inequality. Other than \emptyset , use interval notation to express the solution set and graph the solution set on a number line.

$$6x - 6 \geq 5x - 8$$

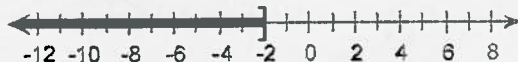
☐ A. $(-\infty, -2)$



☐ B. $(-14, \infty)$



☐ C. $(-\infty, -2]$



☐ D. $[-2, \infty)$



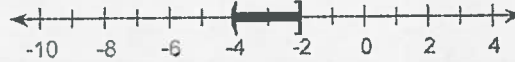
23. Solve the compound inequality. Other than \emptyset , use interval notation to express the solution set and graph the solution set on a number line.

$$-4 \leq -4x - 12 < 4$$

☐ A. $(-\infty, -4)$ or $[-2, \infty)$



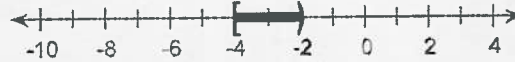
☐ B. $(-4, -2]$



☐ C. $(-\infty, -4]$



☐ D. $[-4, -2)$



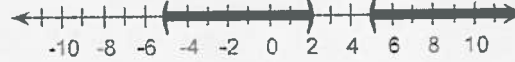
24. Solve the polynomial inequality and graph the solution set on a number line. Express the solution set in interval notation.

$$(x + 5)(x - 2)(x - 5) < 0$$

☐ A. $(5, \infty)$



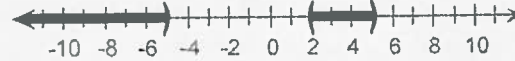
☐ B. $(-5, 2) \cup (5, \infty)$



☐ C. $(-\infty, 2)$



☐ D. $(-\infty, -5) \cup (2, 5)$



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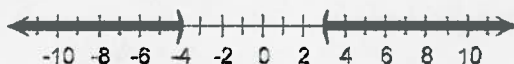
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10.104
Book: Blitzer, College Algebra, 5e

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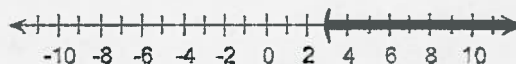
25. Solve the rational inequality and graph the solution set on a real number line. Express the solution set in interval notation.

$$\frac{x-3}{x+4} > 0$$

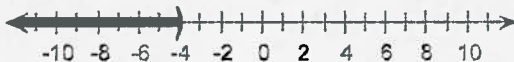
☐ A. $(-\infty, -4) \text{ or } (3, \infty)$



☐ B. $(3, \infty)$



☐ C. $(-\infty, -4)$



☐ D. $(-4, 3)$

