Name: ______________________________ **/10** **Instructor:** ______________________________
Date: ______________________________ **Class Time:** ______________________________

Unit 9 Module B Notes Sections 24.1 – 24.4

View the PowerPoint, Videos, or Textbook for Module 9B.

Vocabulary ***Fill in the blanks.***

1. (Section 24.1) The process of writing a quadratic equation so that one side is a perfect square trinomial is called completing the ______________________________ .

2. (Section 24.2) To solve a quadratic equation:

a. Check for the form $x^2 = d$ *or* $(x + c)^2 = d$. If it is in this form use the principle of ________________

b. If it is not in the form in step a, write it in ____________________ form $ax^2 + bx + c = 0$ with a and b nonzero

c. Then try ______________________ .

d. If it is not possible to factor or if factoring seems difficult, use the ________________________ formula $\left(x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}\right)$.

3. (Section 24.4) The ______________ helps us find the number and type of solutions of a quadratic equation.

Problems ***Show ALL steps.***

1. (Section 24.1) Solve $3x^2 - 9x + 8 = 0$ by completing the square. (Fill in the blanks)

a. $x^2 - 3x + \frac{8}{3} = 0$ Divide both sides of the equation by ________________

b. $x^2 - 3x = -\frac{8}{3}$ Subtract __________ from both sides

Since $\frac{1}{2}(-3) = -\frac{3}{2}$ and $\left(-\frac{3}{2}\right)^2 = \frac{9}{4}$, we add ______________ to both sides of the equation

c. $x^2 - 3x + \frac{9}{4} = -\frac{8}{3} + \frac{9}{4}$ | $x^2 - 3x + \frac{9}{4} = -\frac{32}{12} + \frac{27}{12}$ | $x^2 - 3x + \frac{9}{4} = -\frac{5}{12}$

d. $\left(x - \frac{3}{2}\right)^2 = -\frac{5}{12}$ Factor the perfect square trinomial

e. $x - \frac{3}{2} = \pm\sqrt{-\frac{5}{12}}$ Use the principle of ____________________________

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f.

____ Simplify by rationalizing the denominator

2. (Sections 24.1, 24.3) Use the formula $A = P(1+r)^t$ to find the interest rate (r) if $2,000 compounded annually grows to $2,420 in 2 years. Let A =$ 2,420, P = $2,000 and t = 2. Hint: Use the square root property to solve

3. (Section 24.3) A family drives 400 miles [**d**] to the beach for vacation. The return trip was made at a speed [**r**] that was 10 miles faster. The total traveling time was $14\frac{2}{3}$ hours [or $\frac{44}{3}$ hours]. Find the speed to the beach and the return speed. Recall $d = r \cdot t$ **and** $t = \frac{d}{r}$

	Distance [d]	=	Rate [r]	•	Time $\left[\frac{d}{r}\right]$
To the Beach	________		________		________
Return Home	________		________		________

4. (Section 24.4) Use the discriminant to determine the number and types of solutions and the number of x- intercepts.

Equation	$b^2 - 4ac$	# of solutions	Type of Solution	# x-intercepts
$x^2 + 2x + 1 = 0$	________	________	________	________
$3x^2 + 2 = 0$	________	________	________	________
$2x^2 - 7x - 4 = 0$	________	________	________	________

5. (Section 24.4) Find the x-intercepts of $x^4 - 5x^2 + 4 = 0$ Hint: reduce the equation to a quadratic by letting u = x^2 . Write the x-intercepts as ordered pairs.