Name KEY Test Date: _____

Unit 3 Study Self-Assessment

Part 1: Factor the polynomial WITHOUT using your Flipbook/Notes

1. $r^3 + 27$

$\sqrt[3]{r^3} = r \quad \sqrt[3]{27} = 3$

$(r+3)(r^2-3r+9)$

2. $m^2 - 11m + 18$

$(m-9)(m-2)$

18: $-9 \cdot -2$, $-9 + -2 = -11$

3. $27r^2 - 12t^2$

$3(9r^2-4t^2)$

$3(3r+2t)(3r-2t)$

4. $49a^2 - 42ab + 9b^2$

$(7a-3b)^2$

5. $x^4 - 16x^2$

$x^2(x^2-16)$

$x^2(x+4)(x-4)$

6. $(2x^2 - 3xz)(2xy + 3yz)$

$x(2x-3z) - y(2x-3z)$

$(x-y)(2x-3z)$

Part 2: Solve the quadratic equation WITHOUT using your Flipbook/Notes

7. by factoring $12x^2 - 5x = 2$

$12x^2 - 5x - 2 = 0$

$(3x-2)(4x+1) = 0$

-24: $-8 \cdot 3$, $-8 + 3 = -5$; $\frac{-8}{12} = \frac{-2}{3}$, $\frac{3}{12} = \frac{1}{4}$

$3x - 2 \neq 0$

$+2 \quad +2$

$\frac{3x}{3} = \frac{2}{3}$

$x = \frac{2}{3}$

$4x + 1 \neq 0$

$-1 \quad -1$

$\frac{4x}{4} = \frac{-1}{4}$

$x = -\frac{1}{4}$

8. by completing the square $x^2 - 20x = 4$

$x^2 - 20x + \boxed{100} = 4 + \boxed{100}$

$\sqrt{(x-10)^2} = \sqrt{104}$

$x - 10 = \pm\sqrt{104}$

$+10 \quad +10$

$x = 10 \pm \sqrt{104}$

$x = 10 \pm 2\sqrt{26}$

9. by using the quadratic formula $6 = 3t^2 + 2t$

$3t^2 + 2t - 6 = 0$

$a = 3$, $b = 2$, $c = -6$

$x = \frac{-2 \pm \sqrt{4 - 4(3)(-6)}}{6}$

$12 \cdot -72$: $4 + (+72)$

$x = \frac{-2 \pm \sqrt{76}}{6}$

$x = \frac{-2 \pm 2\sqrt{19}}{6} = \boxed{\frac{-1 \pm \sqrt{19}}{3}}$