Name _____ Date _____

LESSON 8.6

Challenge Practice

For use with the lesson "Factor $ax^2 + bx + c$"

In Exercises 1–5, use the substitution method to factor the expression.

Example: $3y + 11y^{1/2} - 4$

Solution: Let $x = y^{1/2}$. Then $x^2 = y$ and the expression $3y + 11y^{1/2} - 4$ becomes $3x^2 + 11x - 4$. Now factor this expression.

$3x^2 + 11x - 4 = (3x - 1)(x + 4)$

Finally, replace x with $y^{1/2}$.

$(3x - 1)(x + 4) = (3y^{1/2} - 1)(y^{1/2} + 4)$

1. $4y^{2/3} + 12y^{1/3} + 5$
2. $8y^4 - 10y^2 - 3$
3. $\frac{9}{y^2} - \frac{12}{y} - 5$
4. $7\sqrt[3]{y^2} + 36\sqrt[3]{y} + 5$
5. $-8\sqrt[4]{y} + 8\sqrt{y} + 6$

In Exercises 6–10, use substitution to factor, then solve for *x*.

6. $6x^6 + x^3 - 2 = 0$
7. $9x^4 - 12x^2 - 5 = 0$
8. $\frac{5}{x^2} + \frac{28}{x} + 15 = 0$
9. $3x - \sqrt{x} - 14 = 0$
10. $5x^4 + 21x^2 - 20 = 0$