For problems 1-6, as each expression is written, how many factors of the expression are there? If it’s not really factored, say, "One." For $x^3$, count that as three factors. Count constant multiples, like the 8 in $8x^2$, as one factor.

1. $7x^4(x - 3)$.

2. $x^3(x - 1)^2(x + 1)$.

3. $x^2 - 2x + 8$.

4. $5x^3(x + 3)^4$.

5. $(x + 3)^6$.

6. $2x(x + 10)$.

In problems 7-13, factor more if needed, and simplify by canceling common factors. Leave your answers in factored form.

7. $\frac{(x - 3)(x + 3)}{(x - 2)(x + 3)}$.

8. $\frac{x^2 - 1}{x^2 + 2x + 1}$.

9. $\frac{x^2 + 7x + 10}{x^2 + 4x - 5}$.

10. $\frac{x(x^2 - 2x - 6)}{x^3 + 2x^2}$.

11. $\frac{x^2 - 4x + 4}{x^2 - 4}$.

12. $\frac{x^2 - x - 12}{x^2 - 16}$.

13. $\frac{(x + 1)(x - 1) + 2x + 2}{(x + 1)(x - 2)}$. Note: the numerator has only one factor. You must multiply it out completely, and then factor.