Section 6.1

1-17: Simplify. Do not leave zero or negative exponents in answers.

1. $\left(2xy^3\right)^2\left(x^2y^4\right)$

2. $\dfrac{\left(5x^2y^4\right)^2}{\left(-xy^5\right)^3}$

3. $\dfrac{x^2}{8y^3}\cdot\left(\dfrac{2y}{x^2}\right)^4$

4. $\dfrac{3x^{-2}y^{-3}}{9x^5y^{-4}}$

5. $\left(\dfrac{-5}{3}\right)^{-4}$

6. $\left(2^{-1}\cdot3^0\cdot5^{-1}\right)^{-1}$

7. $\left(\dfrac{3x^{-1}}{2y^2}\right)^{-3}$

8. $\dfrac{\left(xy^{-2}\right)^{-1}}{\left(x^2y\right)^{-2}}$

9. $\left(\dfrac{5x^{-1}}{y^{-2}}\right)^{-2}\left(\dfrac{x}{2}\right)^{-3}$

For #10-17, $m>1$ and $n>1$.

10. $x^{m+n}\cdot x^m\cdot x^{m-n}$

11. $x^2\left(x^{n-1}\right)^2$

12. $x\left(x^{m+1}+3x^m+x^{m-1}\right)$

13. $\left(x^{m-n}\right)^m\left(x^{m+n}\right)^n$

14. $x^{2n}\left(x^{2n+1}-x^{3n-2}\right)$

15. $\dfrac{\left(x^n\right)^3}{x^n x^3}$

16. $\dfrac{x^n y^{n+1}}{x^{n-1}y^n}$

17. $\dfrac{x^{n-1}y^{2n}}{x^{n+1}\left(y^2\right)^{n-1}}$

18. Factor: $1-3x^{-1}+4x^{-2}=x^{-2}(?)$

19. Solve for k: $3(9)^{4k}=\left(3^3\right)^k$

Section 6.3   Extra Fun

#1-5: Simplify completely.

1. $\left(4x^2-7x+13\right)\left(x^2-10x-9\right)$

2. $\left(x^{3n}+1\right)\left(x^{3n}-1\right)$

3. $\left(x^{2n}+y^n\right)^2$

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

5. $5\left[2(3x^2-1)+(9-3x)\right]-2(2x-9)$

6. Find all values of k so that the equation is an identity. $(kx+3)^2=4x^2+6xk+9$

7. What polynomial must be subtracted from $5x^3-7x^2+4$ to obtain $-x^3-7x^2+5x-6$?

8. Find a, b, c, and d so that the equation is an identity.
$\left(a+8y^3-3by^2\right)-\left(9y^2+6+5cy^3-dy\right)=8y^3-4+y$

9. (review) Write the equation of a parabola in vertex form that is tangent to the x-axis, has y-intercept 18, and passes through (2, 18).