# Homework #2

**First & Last Name:** _____ **Class:** _____

For homework to be graded, it must be *fully completed*. This means you must **show your work**.

**1.** Rewrite the following expressions in the form $b^n$.

**a.** $\frac{y^{10}}{y^{22}}$ **b.** $\frac{7^{-6}}{7^{11}}$ **c.** $\frac{t^3}{t^7}$ **d.** $\left(5^{-1}\right)\left(5^5\right)$ **e.** $z^{-2}\cdot z^{-17}$ **f. [Challenge]** $\left(2^{-4}\right)\left(4^{-2}\right)$

**2.** Rewrite the following radical expressions in exponential form.

**a.** $\sqrt{t^{12}}$ **b.** $\sqrt[5]{x^3}$ **c.** $\sqrt[4]{1/p^3}$ **d.** $\sqrt[6]{(y/x)^{12}}$

**3.** $M = -6f^6 + 3f^3g^3 - 4g^6$ and $N = 4f^6 - 5f^3g^3 - 3g^6$.

**a.** What is $M + M$?

**b.** What is $M + N$?

**c.** What is $M - N$?

**d.** What is $N - M$?

**e. [Challenge]** What is $3N - 3M$? Hint: Use a previous result.

**4.** Find the values for $c$ and $d$ that would make the following equation true: $\left(cx^6\right)\left(11x^d\right) = 121x^4$.

**5.** Express the area of the entire rectangle (your answer should be a polynomial in standard form).


**6.** Expand (your answer should be a polynomial in standard form).

**a.** $3\left(p^3 - p^2q + q^3\right)$

**b.** $-2g^4\left(3h + 3g^3h - 5g\right)$

**7.** Expand and simplify (your answer should be a polynomial in standard form).

**a.** $(3h + 1)\left(5h^3 - 6h^2 + 2\right)$

**b.** $\left(7b^3 - 3\right)\left(-5b^4 + 1\right)$

**8. [Challenge]** What is the greatest common factor of $13ab$ and $9a^5$?

**9. [Challenge]** Factor $x^2 + 8x + 12$ as the product of two binomials.

**10. [Challenge]** Factor $q^{16} + 8q^8 + 15$ completely.

**11. [Challenge]** The square below has an area of $16 - 8x + x^2$. What expression represents the length of one side of the square?