Algebra/Trig you should know cold before you start calculus.

1. Factor completely:

   a) $4(x-2)^4 - 16(x-2)^2$

   b) $x^2 - 2xy + y^2 - 16$

2. Simplify: Express as a simplified fraction with positive exponents only:

   a) $\left[\dfrac{-8^{1/3} y^{2/5} x^{-2}}{16 y^{-2/5} x^{1/4}}\right]$

   b) $\dfrac{xy+1}{x^2 - y^{-2}}$

3. Solve for *x:* $2x^{\frac{7}{3}} - 16x^{\frac{4}{3}} + 24x^{\frac{1}{3}} = 0$

4. Rationalize the denominator, ***expressing your answer in simplest radical form***:

$$\frac{2x}{\sqrt[4]{8x^3 y}}$$

5. Solve explicitly for y in terms of *w*.

$$\frac{4y-3}{3y+5} = w$$

6. Evaluate the following:

   a) If $\log_a x = 3$, then $\log_a x^4 =$

   b) $\log_2\left(\sin\left(\dfrac{\pi}{6}\right)\right) =$

7. Graph one period of the function $f(x) = -5\cos\left(3x + \dfrac{\pi}{4}\right)$, labeling clearly all the *x*-intercepts, maximum and minimum points within that period. Also, identify the amplitude, period, and the phase shift.