Assignment: Quadratic Equations, Parabolas, Sine and Cosine

① Find the equation of the quadratic that passes through:

(a) $(0,3), (1,6), (-1,2)$

(b) $(2,30), (-1,3), (1,9)$

② Sketch the graph of the following quadratic functions using the x-intercept, y-intercept, vertex

(a) $f(x) = x^2 - x - 2$

(b) $g(x) = -2x^2 - x + 6$

③ Sketch the graph of the following Trig. func. using key points

(a) $y = 25\cos\left(3\pi x + \frac{\pi}{2}\right)$

(b) $y = 1.8\sin\left(\pi x + \frac{1}{3}\right)$

④ A satellite is orbiting the earth such that its displacement D north of the equator is given by

$$D = A\sin(\omega t + \alpha)$$

Sketch two cycles of D as a function of t for the given values.

$A = 850\ Km$, $f = 1.6 \times 10^{-4}\ Hz$, $\alpha = \pi/3$

⑤ The following diagram is of a bridge with parabolic supporting cables. Write an equation that represent the cable with the origin at the low point